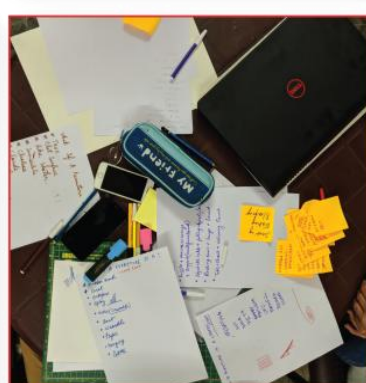
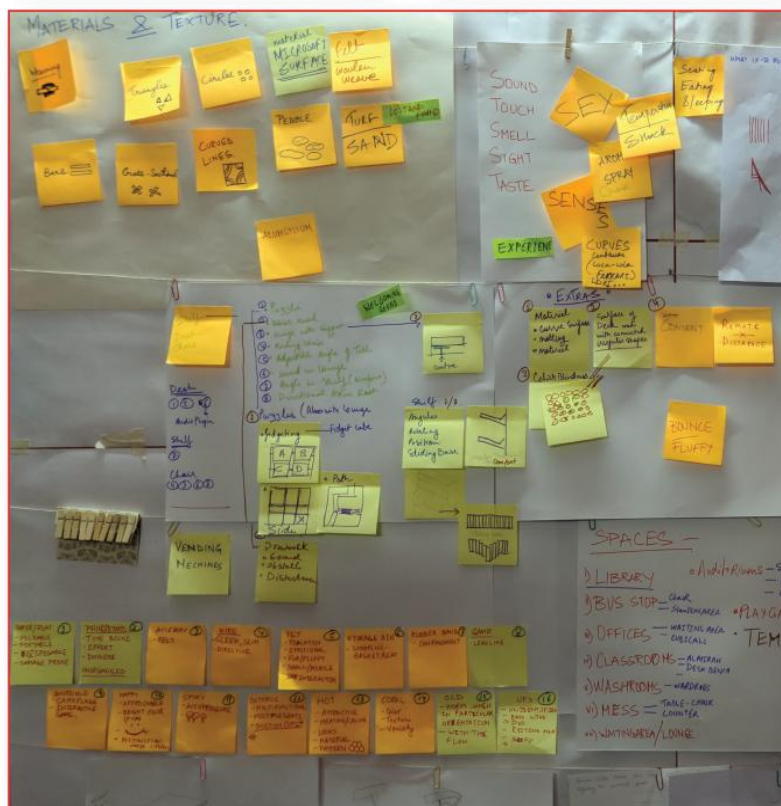
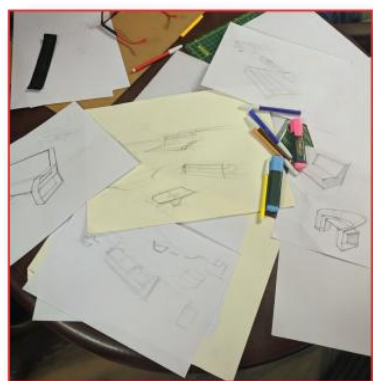


# Design for All



Guest Editor: Dr Ekta Singh, Professor & Acting Director, Amity School of Design, Amity University, India

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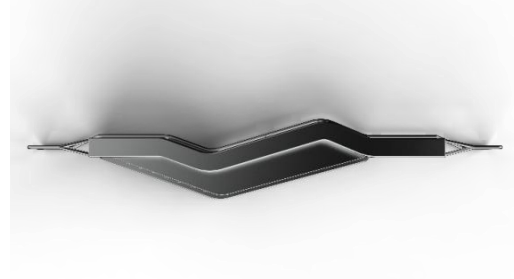
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***Bachelor of Design student, Amity School of Design. Technology and simple traditional work interests me and I try work by mixing these two***



# ***The future of Public Benches- An idea that includes everyone***

***Jagdish Devnath, Navjot Singh,  
Vibhor Gupta, Akhil Rajput***



## **What is Inclusive Design?**

**Inclusive design is the design of an environment so that it can be accessed and used by as many people as possible, regardless of age, gender and disability.**

**Do you know that out of all the people present around the world, the visually impaired or blind constitute about 37 million people; of which 15 million people are from India itself?**



## **PULSE**

**This bench primarily focuses on taking care of the blind or the visually impaired and other people, like children and the elderly.**



**The main idea behind this design was to provide people with a guide, in the bench, so that everyone can easily work through the bench by themselves. A blind or visually impaired person can**

**access the guide rails, and the footrest, which will help him to reach**

to the seat. It provides two levels of seating; a lower one on the front and the upper seat at the other side both can be used for sitting as well as support. The front structure is well made like a compartment with space inside it which is for any luggage; people using it would feel



safe with their belongings. The other side of it has a footpeg which is provided for the people who are sitting on the upper level of seating. A flowing structure makes it physically merge in the place where it is used, and makes it absolutely nonhazardous if seen in a sense of obstacle for anyone. The whole bench is made seamlessly out of stainless steel for longevity.

## **Development**

After the research and experience of our own, we found that visually impaired or the blind are the ones who are excluded from the mainstream society and have to live in a place that is exclusively meant for them, which not only restrains them but also alienates them from the amenities of the abled population.

We first focused on public places; where the inclusivity required was at an immediate level. So, we went ahead and observed many places like the library, Joggers Park, bus stops and railway stations.

After this, we blindfolded ourselves one by one and tried to step in the shoes of a visually impaired person. We got really interesting results and a perspective which we would not have gotten with our normal eyesight. This, then, led us to our next step of ideation.



**We had the research and the result of our small experiment and keeping them in mind we started sketching our designs. It was a good team effort that made the designs, questioned the designs made by others and also worked on a 3D model at the same time. We had a series of discussions about the small things that together make an outdoor bench; and what we could do with these things. An entire wall of the planning room was filled with sketches, sticky notes with points on them and other notes with ideas. Finally, after a while, we started bringing out a form which finally led us to our final form.**

***Jagdish Devnath, Navjot Singh, Vibhor Gupta, Akhil Rajput***

## **Author Note**

***This research was done with respect to Inclusive Furniture Design Competition held at Amity School of Design, Amity University, India.***

## **Abstract**

**PURPOSE:** This piece of inclusive furniture designed to give a sense of equality to the differently abled people keeping in mind that this can be used universally as well. This piece of public/street furniture designed keeping in mind the problems faced by the differently abled person who is visually impaired or old. It has multiple seating options that an old person can sit for longer hours as well as it will have a guide-rail for the blind. The purpose of this furniture is to give access and benefits to visually impaired or old aged people for walking freely in the public places without any support or assistance. This furniture piece not only helps the targeted user but also helps all kinds of users from various age groups with multiple functions it has.

**DESIGN RATIONALE:** Keeping in mind that we wanted to focus on the majority of the population that needs to be included into the world of fortunate ones. We took visually impaired/blind and old aged people as our targeted group. As we found that, the majority of the people around us are blind which constitutes about 37 million people across the globe who are blind, over 15 million are from India itself, which almost half the population of blind people. With the experiences of our own, we noticed that the visually impaired or the blind are the ones who are excluded from the mainstream society and live in place that is exclusively meant for them, which not only restrains them but also make them alienated from the amenities abled population. When we had visited hospitals, NGO's and Blind School we interviewed them and observed that the majority them had problems with open spaces and they felt comfortable in confined and closed spaces. Therefore, our idea to choose this disability is to help them being independent,

and to enjoy nature as we do. Also, to include them into the mainstream society with help of our design.

**Introduction:** Disability is an important problem or hurdle especially in developing countries like India. The problem will increase in future because of increase in trend of non-communicable diseases and change in age structure with an increase in life expectancy. The issues are different in developed and developing countries, and rehabilitation measures should be targeted according the needs of the disabled with community participation. In India, a majority of the disabled resides in rural areas where accessibility, availability, and utilization of rehabilitation services and its cost-effectiveness are the major issues due to which most of them face challenges in their social life.

**Defining disability:** The definition of the population with disabilities is a key element in the design of a data collection activity, for it sets the scope and coverage of the whole data collection process. From the conceptual point of view, there is no universal definition of what constitutes a disability or of who should be considered as having a disability. Moreover, there is no one static condition of disability. A disability is a result of the interaction between a person with a health condition and a particular environmental context. Individuals with similar health conditions may not be similarly disabled or share the same perception of their disability, depending on their environmental adaptations. For example, having access to technical aids, services or medication, or physical adaptation to the environment may allow individuals to overcome their disabling conditions. Disability is not an all-or nothing phenomenon but involves degrees of difficulty, limitation or dependence, ranging from slight to severe. Questions should be designed to capture those with severe as well as those with less severe forms of disabling conditions and should take into account any assistive devices or accommodations that the person may have. [Davendra, D. (2016)].

**World Health Organization:** Disability is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. 'Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person's body and features of the society in which he or she lives. Overcoming the difficulties faced by people with disabilities requires interventions to remove environmental and social barriers'. [Davendra, D. (2016)]

**Review of Literature:** Today, more people with disabilities are there than ever before, due to which most of them face challenges in their social life. Any restriction or lack of ability to perform an activity in a manner or within the range considered normal for the human beings, resulting from impairment is termed as disability. Impairment concerns the physical aspects of health; disability is the loss of functional capacity resulting from an impairment organ; handicap is a measure of the social and cultural consequences of an impairment or disability. The types of disability include loco-motor, hearing, speech, visual and mental disability. [Kumar S. Ganesh et al (2017)]

As per Census 2011, in India, out of the 121 Cr population, about 2.68 Cr persons are 'disabled' which is 2.21% of the total population. In an era where 'inclusive development' is being emphasized as the right path towards sustainable development, focused initiatives for the welfare of disabled persons are essential. This emphasizes the need for strengthening disability statistics in the Country. [Davendra, D. (2016)]

There are ample reasons for developing a sound national disability statistics. Information on their socio - demographic profile is essential for welfare of disabled persons. Information about their functional status is important to identify needs since two individuals with the same impairment may face

different types of difficulties in undertaking certain activities, and so have different needs that require different kinds of interventions.

Functional status data is essential for determining the broader social needs of persons with disabilities, such as provision of assistive technology for use in employment or education or broader policy and laws. Population disability data is essential for monitoring the quality and outcomes of policies for persons with disabilities. In particular, these data help to identify policy outcomes that maximize the participation of persons with disabilities in all areas of social life from transportation and communication, to participation in community life. [Kumar S. Ganesh et al (2017)]

## **MEDICAL CERTIFICATION OF DISABILITY:**

The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 defines disability as:-

- *Blindness;*
- *Low vision;*
- *Leprosy-cured;*
- *Hearing impairment;*
- *Loco motor disability;*
- *Mental retardation;*
- *Mental illness;*

Each of the above disabilities has been further defined under separate sub section of Section 2 of the said Act i.e.

- *Blindness (2(b)),*
- *Hearing impairment (2(l)),*
- *Leprosy-cured (2(n)),*
- *Loco motor disability (2(o)),*
- *Mental illness (2(q)),*
- *Mental retardation (2(r)) and*
- *Low vision (2(u))*

[Davendra, D. (2016)]

## **CHALLENGES:**

- **Difference in appearance**—*illness, anger, depression, missing body parts, disfigurement*
  - **Difference in movement**—*use of wheelchairs, assistance dogs, canes, walkers*
  - **Difference in communication**—*stuttering, slurring, tics, lip-reading and signing, using a device to speak*
  - **Difference in social behavior**—*lack of eye contact, standing too close or too far away, extremely fearful about arbitrary objects, inappropriately friendly*
  - **Difference in learning**—*inability to understand signs or instructions, manage money, operate common appliances*
1. [Sevo R. (2012)]

The World Health Organization (WHO) describes barriers as being more than just physical obstacles. Here is the WHO definition of barriers:

“Factors in a person’s environment that, through their absence or presence, limit functioning and create disability. These include aspects such as:

- *a physical environment that is not accessible,*
- *lack of relevant assistive technology (assistive, adaptive, and rehabilitative devices),*
- *negative attitudes of people towards disability,*
- *Services, systems and policies that are either non-existent or that hinder the involvement of all people with a health condition in all areas of life.” [WHO. 20012]*



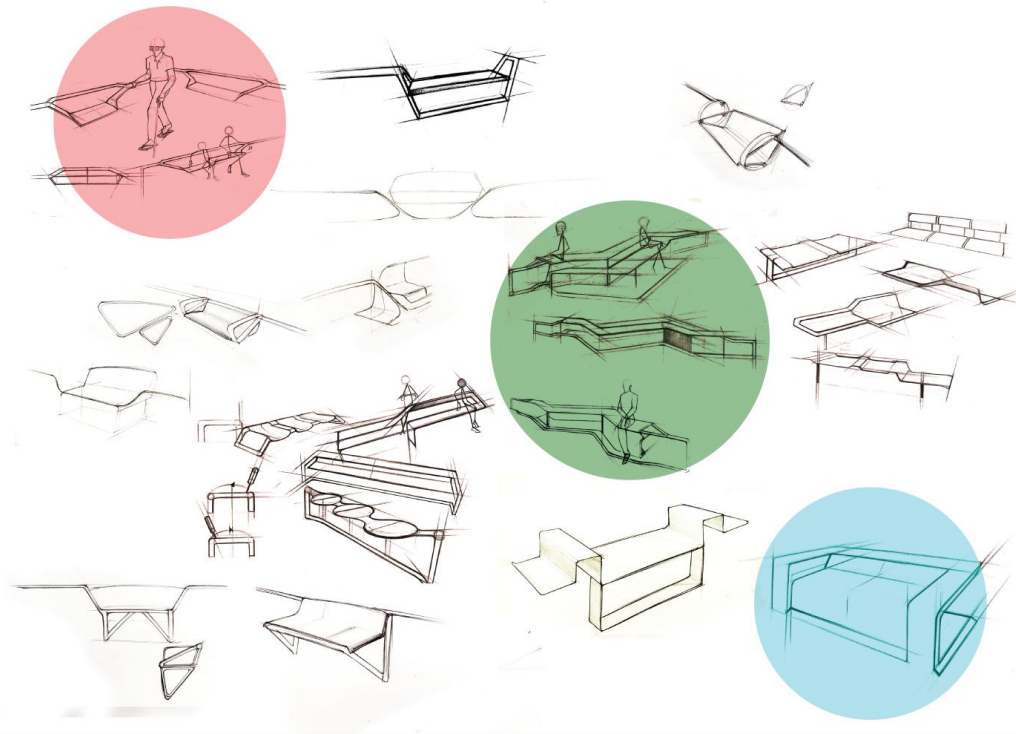
## PROCESS:

**BRAINSTORMING:** The initial thought process was to study and analyze the problems faced by the differently abled people i.e. blind, in public places such as railway stations, bus stops etc. We first focused on public places; where there was inclusivity was required at immediate level, so we went ahead and observed many places like library, Joggers Park, bus stops and railway stations.

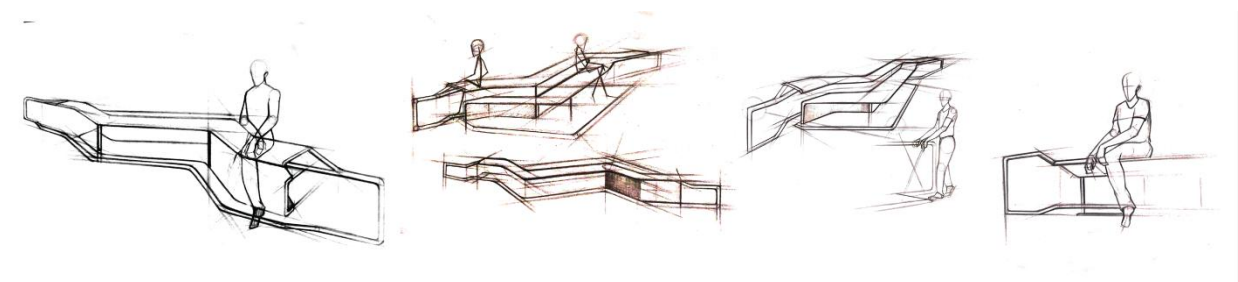


**EMPATHIZE:** We blindfolded ourselves to get into the shoes of the visually impaired and look for problems and experiences that they face in daily life.

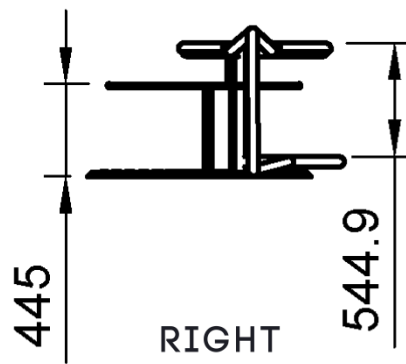
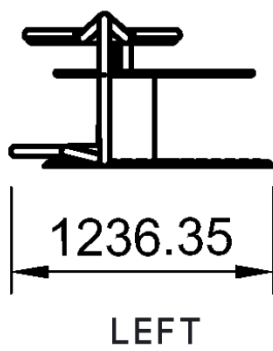
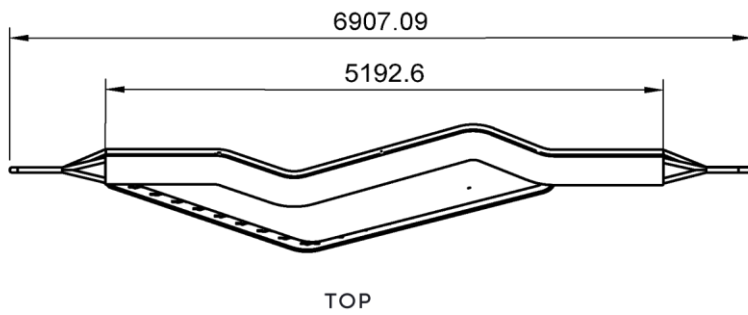
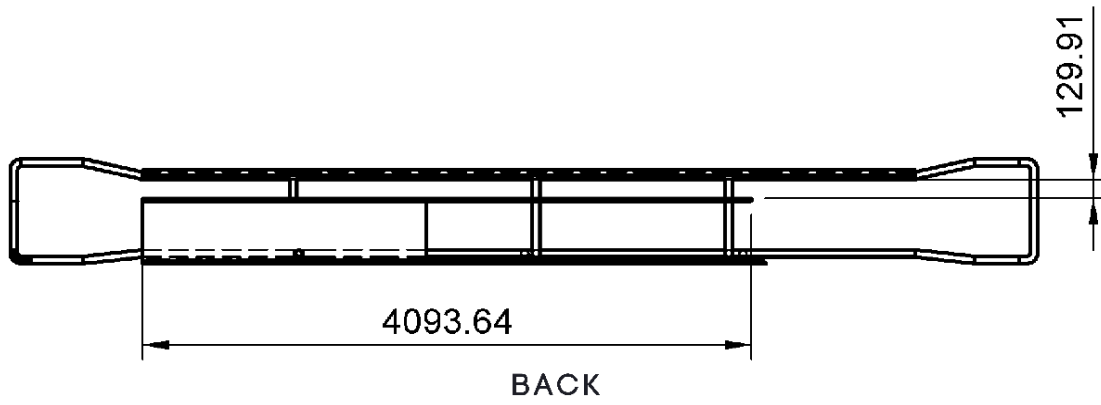
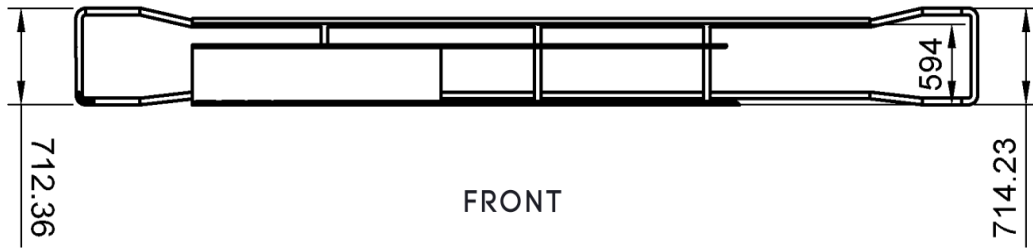
**IDEATION:** This was the stage where we made up our mind what we had to do. After a long brainstorming session we came to a point where we all four of the team members decided that we had to work on bench that caters to most of population.



**CONCEPT DEVELOPMENT:** In This stage, our concept was finalized and we were working on the final form of the bench.



**2D DRAWINGS:** These are the two dimensional drawings with dimensions of the final concept. All dimensions are in mm.



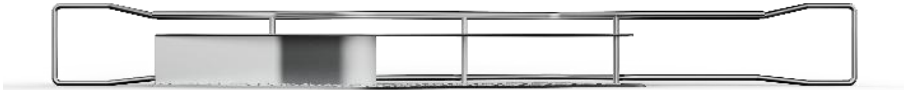
**3D Visualizations:**



**Left Side Elevation**



**Right Side Elevation**



**Front Elevation**



**Back Elevation**



**Top View**

**Detailed Views:**



**1. Has space for luggage.**

**2. Two levels of seating. Lower level is for elderly and blinds, the other one is for younger generations. With tactile feedback to the visually impaired user.**



**3. Footpeg is provided for the people who are sitting on the upper level of seating.**

**4. The form of the Bench is such that it will lead the visually impaired to the seats with help of the guiderail that's been provided.**

**Artistic Impression with actual environment:**







## **MATERIAL SPECIFICATION & JOINERY:**

**Material to be used for this public furniture i.e. bench is aluminium alloy. As this is a public furniture. We wanted to keep the bench with minimum movable joints. As movable joints, tend to wear and tear much faster than fixed or rigid joints. Hence, we came up with a form that is not only obstruction free but also does not have any movable joints that may harm or which may wear and tear easily.**

**DESIGN IMPLICATIONS:** We as a group of designers, decided to provide solution to the problem for blind and old aged people. Therefore, we want to propose an idea of an inclusive public furniture for Joggers Park/Bus Stop, which makes it comfortable for differently abled people to access it without taking help or assistance from anyone. Our purpose is to unite the abled and differently abled people through a design solution. This piece of furniture would serve both the target audience as well as universal population as we have tried to

make it accessible for all. Our aim is to make differently abled people self-sufficient; more empowered and to encourage them to be more confident about the space they are in.

**Keywords:** Blind, Old Age, Dwarf, Physically Handicapped, Bench, Railway Station furniture, Bus-stop Furniture, Public Furniture.

## **CONCLUSION:**

Keeping in mind that we need to add the better part of the less fortunate into the world of the fortunate ones. We took visually impaired and elderly as our targeted group, as they constitute about 15million and about 1.04million elderly in India itself, so to cater the needs of these group of people, we designed a bench to seamlessly fit into the environment and aid them.

The pulse is our approach to tackle the problem faced by the visually impaired and the elderly, as these usually people struggle in the public places finding a comfortable seat.

- 1. The pulse is an easy to reach in a public place like a railway platforms due to the hand rails provided to support and guide people towards the seats.*
- 2. The two levels of seating ensures that any kind of user can comfortably rest for few moments.*
- 3. The beveled floor panel provides tactile feedback to the visually impaired user with a guide stick.*
- 4. Keeping in mind the niche of a railway platform, the space is provided under the seat is designed in such a manner that the users can keep their luggage conveniently along with them.*

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***Nimmit Malhotra***

***Bachelor of Design, Product Design***

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***Faculty Coordinator- Dr. Ekta Singh***

# **Chariot Chair**

***Nimmit Malhotra***

***Designing great products has been the goal for me since quite an early age. I do not just want to create products, rather want to create great products, which when enter the market, are a fad. Not just for the marketing aspect I wish to develop products for the people who are in need of the things they are supposed to have, the people not dignified enough to be thought of by the rest of the world.***

## **Abstract**

**“Over a billion people live with some form of disability.” [The WHOQOL Group, [The World Health Organization quality of life assessment \(WHOQOL\)](#)]**

**And as the rate of disability continues to increase, people with disabilities still experience barriers of social stigma and discrimination on a daily basis.**

**Thus, the objective behind designing a wheelchair for all is to bridge the gap between the abled and the specially abled sections of the society. The purpose behind the redesigning of the traditional wheelchair was to make wheelchair, that is typically an object of use for the physically impaired, accessible and usable for all. For the abled class of population, it seeks to replace the office chairs and single seater sofas. The more luxurious versions yet to be designed, this set of wheelchairs is present to create a trend of using wheelchairs like we use our sofa sets and not highlighting or differentiating the impaired people, rather making them a part of the same class as other people.**

**Accessibility to different kinds of spaces, be public or private is important in daily life. It is significant while dealing with internal and external environment.**

## **Introduction**

**The designing process started from the competition and exhibition named 'Descon'19'. The criteria's of participation were to design an inclusive product.**

**Inclusive design is a design which targets to cater each individuals' needs as a whole, barring none. As one knows traditionally in the field of design, throughout the decision-making process there is a tendency to include and exclude users due to their differences. This is done based on the classification whether they are potential customers and clients. While these obsolete thoughts of sole purpose of earning money being discarded, designers have started to move towards more of inclusive design. Inclusivity in design makes the designs more welcoming to people, most importantly, the specially abled sections of the society. The idea behind inclusive design is to make designs accessible to more and more people.**

**The inclusive product created here is a wheelchair, specially designed for everyone. Not just for the people who are impaired, this wheelchair caters to everybody who wants to sit, and a bit more. Not for just the extra comfort, the *pie'ce de re'sistance* of this wheelchair is that it makes it easier for the users to shift to different platforms, hassle free. Different platforms, like shifting from the chair onto their beds, sofas, or even the *water closet*. The mechanism behind this is that the back rest converts to a transferring platform, as seen in the design under the head 'Process'. Other features, to heed the abled are that the chair has a 0 degrees turning radius, providing better**



**functionality and movement. Also, front tires inspired from the hoverboard along with enhanced power makes it a faster wheelchair altogether, proving a reasonable option for open areas.**

## **Literature Review**

**A traditional wheelchair is a chair with wheels, used when walking is difficult or impossible due to illness, injury, or disability. Wheelchairs come in a wide variety of formats to meet the specific needs of their users. The initial design of a wheelchair was to just assist with the mobility for a person from one place to another, often requiring another person to tag along in case of instances. The instances may include the times when the person on wheelchair must be shifted from the wheelchair onto other areas of seating, like sofas, beds or the water closets. Further as the designs developed there were improvements in terms of comfort and reliability. Also, moving on from manual type of wheelchairs towards the automatic wheelchair. The wheelchairs driven by power are casually controlled using the buttons in the arm rests. Accessibility through interface is necessary for easy use. [1]**

**The earliest records of wheeled furniture are an inscription found on a stone slate in China and a child's bed depicted in a [frieze](#) on a Greek vase, both dating between the 6th and 5th century BCE. The first records of wheeled seats being used for transporting disabled people date to three centuries later in China; the Chinese used early wheelbarrows to move people as well as heavy objects. A distinction between the two functions was not made for another several hundred years, until around 525 CE, when images of wheeled chairs made specifically to carry people begin to occur in Chinese art. [2]**

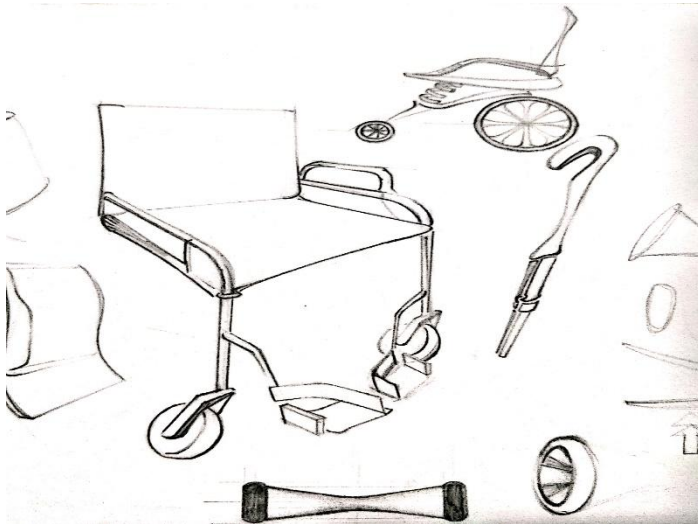
**The target was to diminish the use to manual wheelchairs that are being used in our country, mainly because of the earnings of people are very low. That being a hurdle for them in buying better type of wheelchairs. Given another thing that the quality of life led by the disabled in our country is low.**

**This wheelchair designed has first above all the main facility and luxury of being able to move the disabled person from one platform to another. As described in the 'Process' section under, it is seen how the chair can be twisted, which makes a platform for shifting onto other platforms. Other platforms being the sofa, beds and most importantly the water closet. Other features of difference are that it is a significantly more powerful wheelchair, making it a viable option for both indoors as well as outdoors. The extra power, resulting in more speed comes from the hoverboard inspired front wheel. The buttons are provided for movement like any other wheelchair to provide with all the options, along with manual override option in case of uncertain behaviour by the chair. The rear wheels are slightly angled to give more agility to the wheelchair. This feature was taken up from the wheelchairs that are used in the game of wheelchair basketball. The springs under the seat are inherited to give more comfort to the person throughout the day. The other feature provided by the springs are that one can move towards the transferring platform with ease, as the springs help in uplifting the person while that person is leaning backwards. Lastly, the footrest is angled in a way that it's attachment rods do not come and hurt the person in case of movement (the footrest can be removed as well).**

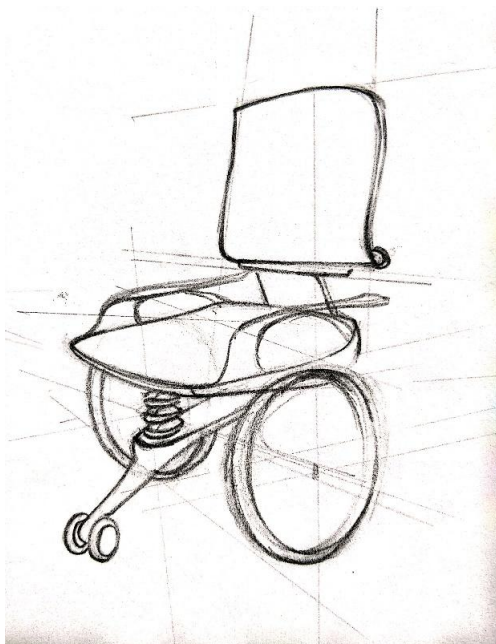
## **Process**

- 1. Brainstorming/First Ideation: the initial thought process was generated by simply studying the already existing manual***

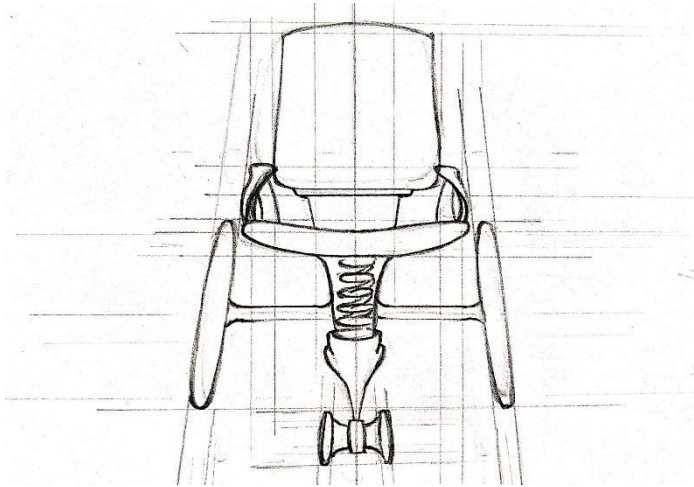
***wheelchair and studying in depth, the problems or the lack of features that are there in it.***



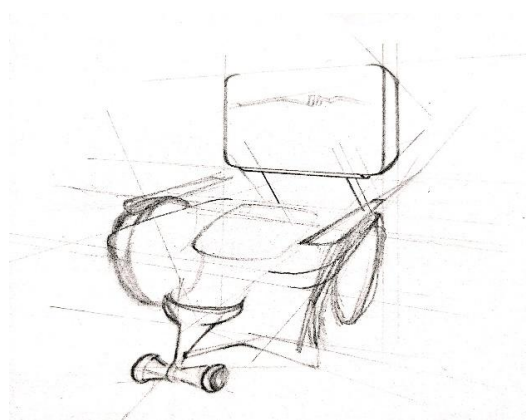
***2. Second Ideation: the improvements in this phase were of mostly improving the form of the chair in order to give enhanced comfort. Rest was giving better aesthetics to make it more appealing to all the sections of the society. Therefore a look that is similar to the office chairs.***



**3. Third Ideation: this phase was to improve the functionality and movement, by giving a few tweaks to the parts that are present. The inspiration from wheelchair basketball can be seen in the design under.**

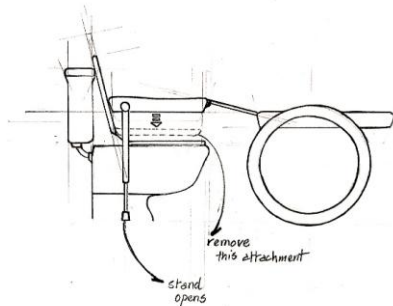
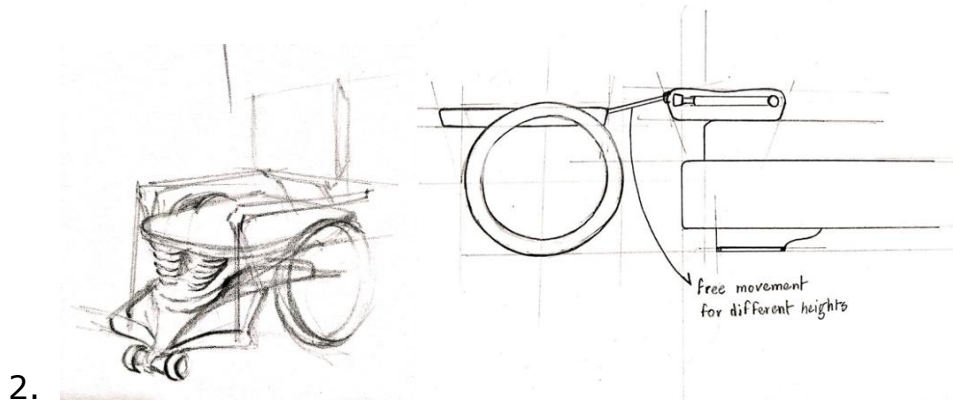


**4. Fourth Ideation: In this phase the most important element was added. The main feature of this wheelchair that is. It was the mechanism which would help in transferring platforms. The attachment to assist the transfer onto the water closet can be seen in the design made under. Also, the dimensions were studied and incorporated in this head to make it ergonomically viable to most classes, specifically the specially abled population.**

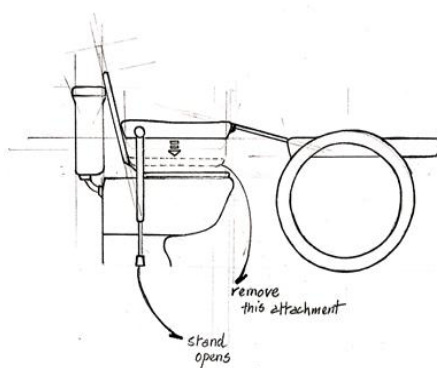
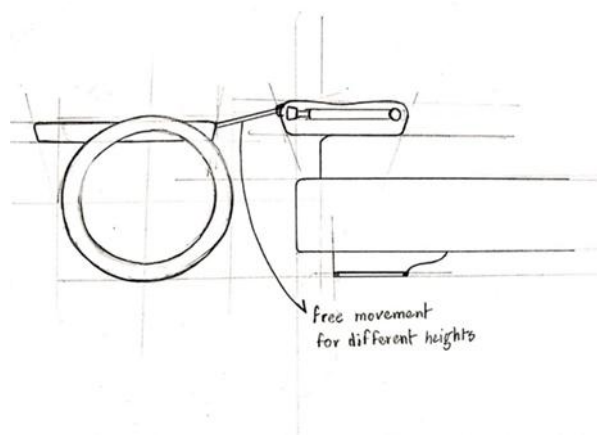
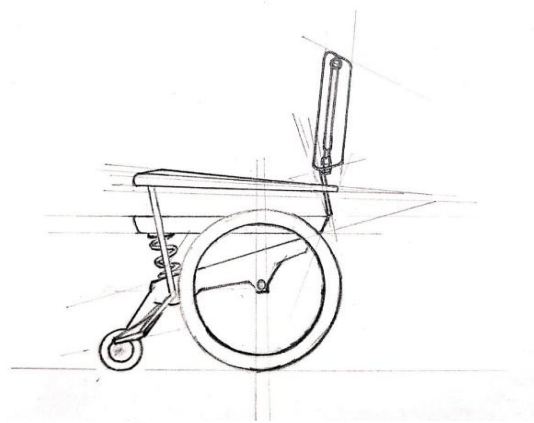
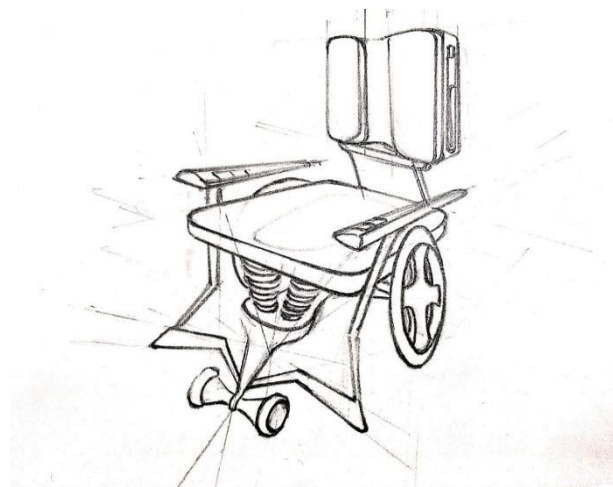


**5. Fifth Ideation: this is the final concept with all the features taken up in other phases, running hand in hand. Improvements in all**

**area of asking were made and the concept was fixed. Some of the features are also shown in the drawings under.**



**6. Final concept: the final drawings of the concept finalised can be seen under. These drawings showcase the finesse of designs and the features of difference that are incorporated for this wheelchair to stand out.**



## Methodologies

The research process was to initially study the disability that has been targeted for the creation of the product. So, the disability taken up in this case is to enhance the product available to the people who are impaired to walk or stand. There are different classifications under this, as there are people who can walk a bit, people for whom this task is impossible and others who are impaired for the shorter period of time, which is because of certain injuries that have occurred to them.

After that it was to look up to the products that are already there in the market in order to aid the specially abled. So, the already existing manual wheelchair was studied to get a feedback out of, which is now an obsolete design. This involved a thorough inspection of the



elements that are provided in it and the elements, specially abled people would require in order to live without having a feeling of being different or needing the support of others. The idea behind it was to make them self-reliant, by providing them with what they did not have. Most to all the ease of accessibility to the things the abled have.

## **Conclusion**

There are many types of wheelchairs that already exist in the market and provide with a lot of features. The situation is problematic still, as there near to none design of chairs which provide with features like that of transferring platforms, which can help the impaired user to move from his or her chair to other grounds like sofa, beds and most importantly the water closet. It is a harsh fact that the disabled still have to ask for help, from other people attending them, to shift them from their wheelchairs. It is mentally suffocating for both, the disabled person as well as the person attending to them. So, the objective behind this design was to make the impaired, a 100 percent self-reliant. Which must result in them leading a quality life, and they can be proud of themselves.

Other reason for taking up the manual wheelchair was that our country is poor compared to other countries, which makes it tough for them to afford high quality, feature loaded chairs for the people of the country. That is because most of the disabled are from poorer backgrounds, leading a low quality of life. Therefore, this wheelchair has been designed at a price slightly higher than the normal but, way less compared to the chairs that are loaded with features. This design gives a lot compared to the competition and extra, while coming at a low price.

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**Anandita Rao**

**Amity University, Noida, Uttar Pradesh**

**B Des (Product Design)**

***I am an inspiring designer, perusing my product designing from Amity School of design, Amity University Noida.***

***I am a forever learner who likes to face challenges and create concept-based products.***

***Under the guidance of Professor Dr. Ekta Singh, Who gave me the opportunity and guidance to develop this product, the concept and product have come to reality.***

# **ROTATING KITCHEN CABINET INCLUSIVE FURNITURE**

*Anandita Rao*

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*B Des (Product Design)*

## **ABSTRACT**

**Each day we hear about disabled people, and the challenges faced by them. According to WHO Disability is 'a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations'[1]**

**Frozen shoulder restricts the movement of the shoulder and thus does not allow one to do any activity that requires the movement of shoulder.**

**The design of 'The Rotating Kitchen Cabinet' will solve this problem. The design focuses on two areas, it will help the group of people suffering from frozen shoulder and who have problem in shoulder movement, take out containers from the cabinet, the circular movement will also help them exercise for as a part of physiotherapy. Rotating the cabinet in the circular movement will bring the container to the level to which their shoulder rises, they can then rotate the cabinet to pick up that particular container. The furniture piece can also be used by old ladies who have problem using the cabinets that**

are on height in the kitchen. This will also allow people on wheelchair to make use of it and not seek help from anyone in the kitchen this makes the furniture Inclusive.

## **INTRODUCTION**

In this age the knowledge of medical sciences is increasing each day and people are getting to know more and more about disease and their cure. Some diseases turn into disabilities or in simple terms does not allow an individual to perform a particular task.

Disability affects approximately 56.7 million, or nearly 1 in 5 (18.7%) people in the United States living in communities and in India according to Census 2011 22.4% of the population is disabled. Disability affects more than one billion people worldwide.

Looking at this large figure of people in the entire world who are suffering from some kind of disabilities and difficulties in functioning, it is very important to make environment inclusive for them.

The term Inclusive refers to all the services or items that can be normally used and accepted by all. Including people with disabilities in everyday activities and encouraging them to do everyday tasks like else.

The concept of inclusive design emphasizes on universal design for physical usability and accessibility for all, such as easy to use physical structures and eliminating barriers for easy movement in the environment. The aim of inclusivity is to including people with disabilities in everyday activities and making an environment which allows them to have roles similar to everyone who do not have a disability. This involves more than simply accepting disabled people, it requires making day to day life as easy for them as any other

**individual so that they are able to perform their day to day work without the help of anyone and do not feel handicap.**

**The other thing which inclusivity requires is making sure that adequate policies and practices are in effect in a community and organization for everyone.**

**Nevertheless, over the past 25 years or more, ideas have been developing around the desirability for products, services and environment to better match needs of those excluded or denied access by inappropriate design.[3]**

**Inclusive furniture is furniture designed keeping in mind both the disabled and the abled, but this concept is only used and thought of in public places.**

**The aim is to possibly make the use of inclusive furniture possible at home everyday.**

**When we talk about disabilities the common disabilities which come to our mind are vision Impairment, deaf or hard of hearing, disabilities which do not allow one to walk etc.**

**There are some more disabilities which are caused my disorders in the body and limit the functioning of various parts of the body.**

**Frozen Shoulder is one such disability. Frozen shoulder, also called adhesive capsulitis, causes pain and stiffness in the shoulder. Over time the shoulder becomes very hard to move. After a period of worsening symptoms , frozen shoulder tends to get better, although full recovery may take up to 3 years. **Physical therapy**, is the primary treatment recommendation for frozen shoulder.[4]**

**Frozen shoulder restricts the movement of the shoulder and does not allow one to do any activity that requires the movement of shoulder.**

**Frozen shoulder most commonly affects people between the ages of 40 and 60, and occurs in women more often than men. In addition, people with diabetes are at an increased risk for developing frozen shoulder.[4]**

**This does not allow the patients to use something as simple as the kitchen cabinets as the movement of the shoulder is restricted. They often cry in pain while taking out anything from the kitchen cabinet or ask for help.**

**Very similar is the case with old age and people on wheel chair, they can work on the kitchen surface but then it comes to accessing the cabinet, it's a pain. It is also difficult to make a cabinet for people of different heights. Usually short people are unable to have access to it on their own without external force.**

**To cater to this problem, I have designed a cabinet for use in kitchen. The cabinet is circular moving and rotates on axis. It has cavity to keep containers. It is a wall hanging cabinet which can be easily used by people suffering with frozen shoulder, old age people, anyone on wheel chair and also by people of varied heights. This cabinet also helps the patients of frozen shoulder **exercise by using it** unintentionally. The cabinet is thus multipurpose, it is making work easy and also making them exercise. The cabinet is designed keeping in mind the need of everyone and the design is FOR ALL.**

**To meet the objectives of the research, we commence with a review of the literature to study in depth about the disability Frozen shoulder, its caused, symptoms and treatment. It is followed by an outline of the methodological approach of personal interviews and surveys. Followed by the conceptualization of design and its details. Finally,**

the conclusion, advantages, usage and implication of the furniture piece.

## LITERATURE REVIEW

There has been a lot of research on Frozen shoulder, its causes, symptoms and treatment.

According to Felicia Soviero, Simona Gucciardi, Alessandro Geraci(1970) The " frozen shoulder ", is the most peculiar among the pathologies that can interest the shoulder. It has been described as a process that involves thickening contracture of the capsule around the shoulder joint. Frozen shoulder leads to stiffness and pain in the shoulder which reduces movement in the joint. In some cases, it prevents movement in the shoulder altogether. Usually only one shoulder is affected although in one in five cases the condition spreads to the other shoulder also. The pain makes it very difficult to



carry out the full range of normal shoulder movements; in fact, Codman coined the term of "frozen shoulder" because this disease "freezes" the functionality of the shoulder limiting the joint in the excursion of the joint with pain.[5] The purpose of this review is to illustrate the various proposals that are present on literature to explain and to take care of this disease, that is entirely not still known.



## **Causes**

**Frozen shoulder happens more often in women than men, and more likely to get it if between the ages of 40 and 60. Their risk also go up if they are in the process of recovering from a medical condition like a stroke or surgery that keeps you from moving your arm.**

**Some medical conditions can increase risk too. You are likely to get frozen shoulder if you have diabetes. Around 10% of people with diabetes develop frozen shoulder. Other medical problems like heart disease, thyroid disease, or Parkinson's disease can also lead to frozen shoulder.**

## **Symptoms**

**The main symptoms of a frozen shoulder are pain and stiffness that make it difficult or impossible to move it.**

**If you have frozen shoulder, you'll likely feel a dull or achy pain in one shoulder. You might also feel the pain in the shoulder muscles that wrap around the top of your arm. You might feel the same sensation in your upper arm. Your pain could get worse at night, which can make it hard to sleep.**

## **Treatment**

**One can leave a frozen shoulder untreated, but the pain and stiffness might remain for up to three years. A combination of the following can speed up your recovery:**

- *physical therapy*
- *medication*

- *surgery*
- *home care*

## **Physical Therapy**

**Physical therapy is the most common treatment for a frozen shoulder. The goal of exercising is to stretch the shoulder joint and regain the lost motion. It can take from a few weeks to nine months to see progress. A home exercise program of range of motion exercises is important.**

## **Medications**

**To treat the pain and reduce joint inflammation in the shoulder, doctor may recommend an anti- inflammatory medication like aspirin, ibuprofen, or naproxen sodium. A steroid injection in the shoulder joint may also help.**

## **Home Care**

**Placing ice pack on your shoulder for 20 minutes at a time several times a day can help to decrease pain. If one is working with a physical therapist, the exercises can be done at home. Physical therapist provides instructions about the types of exercises to be done, how often to do them and when to push yourself harder. Most people can improve their condition without surgery.[6]**

**7 stretching and strengthening exercises for frozen shoulder (Harvard Health Publishing,2014.) This article educated about the 7 main**



**exercise that one should do when suffering from frozen shoulder. These are Pendulum stretch, Towel stretch, Finger walk, Cross-body reach, Armpit stretch, Outward rotation and Inward rotation.**

**In the end of the literature review the main factor to keep in mind is that the mind is that exercising is the main cure and it helps in opening of the shoulder muscles and relieves in the pain caused. Regular exercise is required to lessen the pain and for free movement of the shoulder. [7]**

## **METHODOLOGY**

### **Source of data:**

**Primary Data collection method was considered. This type of data is specifically collected for the research project. The primary data was collected by a questionnaire designed exclusively for the study and personal interviews conducted of the user group and a physiotherapist.**

**Questionnaire survey method was adopted for this study. This questionnaire was designed and then circulated among people to understand the problems faced by people (mainly ladies) suffering from frozen shoulder while working in the kitchen and using the kitchen cabinet. The questionnaire was formed after reviewing existing literature and deciding the factors and variables.**

**Questionnaire was first pilot tested on a sample of 10 people chosen via convenience sampling. It was circulated among family and friends to understand the shortcomings of the questionnaire. All the changes were made. Then the questionnaire was circulated amongst the user group.**

**After the product was designed user testing method was used to test the product on the users, its comfort, and accountability.**

## **OBJECTIVES**

- *To study the problems faced by the user group in everyday working.***
- *To study the limitations of the existing kitchen cabinet.***
- *To study the requirement of the patients.***
- *To identify the various pre existing therapies used.***
- *To do a user study of the final product designed.***

## **DATA ANALYSIS**

### **PERSONAL INTERVIEWS**

#### **PERSONAL INTERVIEW WAS CONDUCTED WITH 5 SAMPLES**

**Sample A- female (45) suffering with frozen shoulder**

**Sample B- female (62) suffering from frozen shoulder**

**Sample C- female (56) old age**

**Sample D- male (58) suffering from frozen shoulder**

**And personal interview of physiotherapist Dr. Uday Yadav**

### **Analysis of personal interview:**

**The patients who suffer from frozen shoulder are ladies. They in their interview told that due to frozen shoulder they have Sevier pain in the shoulder and their movement is restricted. Sample A told that she has problems in self grooming, opening the door. She always needed others help to do tasks. Working in the kitchen was a challenge for her as there was stiffness in her hand and her hand would not rise above a certain level.**

**Dr. Uday informed that exercise was the main treatment and exercising all day was required for the muscles to expand and open up for the free movement of the shoulder. he informed that circulation motion exercise is the best in such case.**

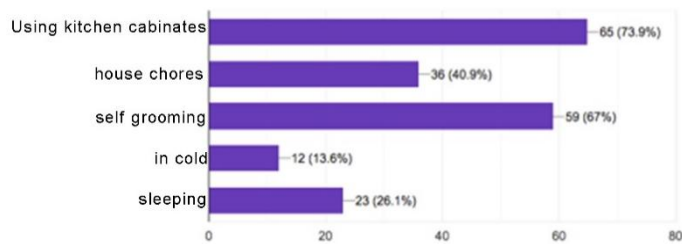
**Sample B who was taking physiotherapy told that she has made to do exercises and asked to perform them every hour but forgot to do that each day and the pain increases.**

**This enlightened us with a very important aspect of the design with was exercise while performing the activities and circular motion exercises are curtail**

### **SURVEY**

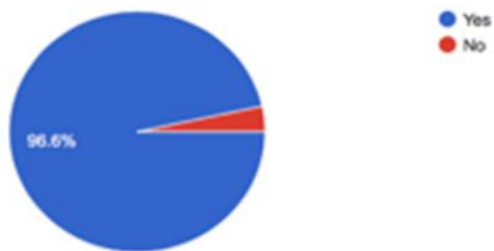
**Survey was done using questionnaire technique. There were 133 responses to the survey, to which the result were:**

## PROBLEMS FACED IN FROZEN SHOULDER



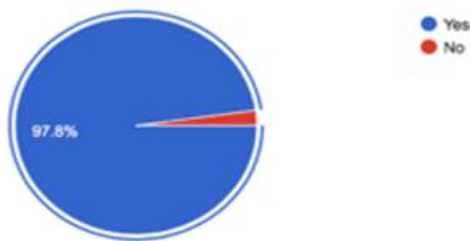
**73.9% of the people faced problems using kitchen cabinets**

## DO YOU FEEL THAT THE EXISTING CABINET IN KITCHEN IS NOT EASILY USED BY PATIENTS OF FROZEN SHOULDER?



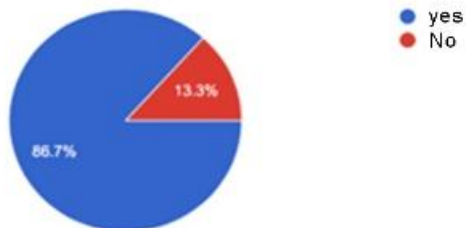
**96.6% of the population felt that there is a need to change the design of the kitchen cabinet as it is not usable by all.**

## DO YOU FORGET TO EXERCISE YOUR SHOULDER AFTEN?



**97.8% of the people said that forget to exercise.**

## WOULD YOU LIKE TO HAVE A CABINET THAT MAKES WORK EASY AND HELPS EXERCISE AT THE SAME TIME?



### USER TESTING

User testing was done to test the product and its comfort and to make changes and to make it more usable. User testing was done on the samples of the personal interview. The feedback of the users was



positive, they were comfortable using the product, the movement of the hand was free and the product was of great use.

## AIM

The aim was to design an inclusive furniture piece that can be used in kitchen by people suffering from frozen shoulder, people on wheel chair, old age, and different heighted people.

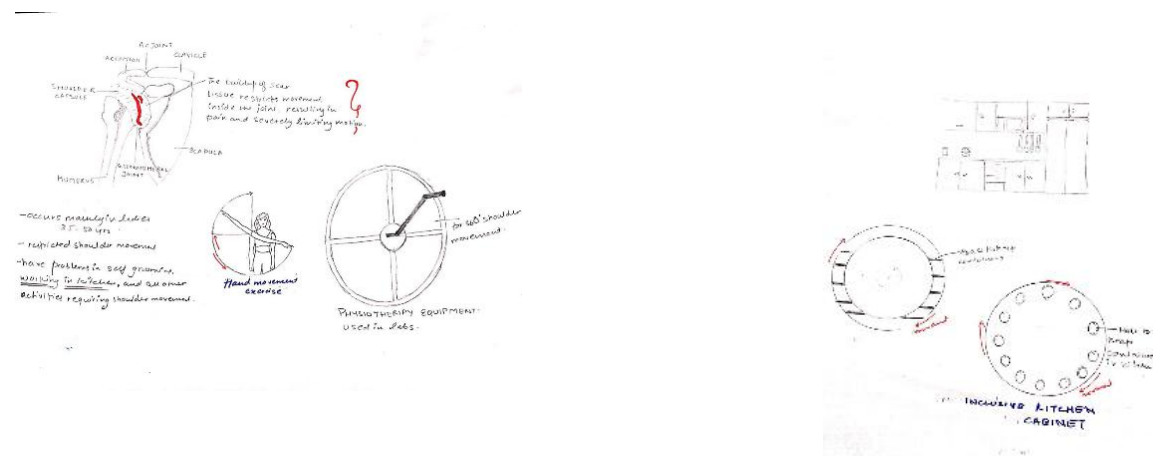
## PROCESS

### Problem identification

The disabilities keeping in mind which the design is to be made for are, Frozen shoulder (shoulder movement restriction), wheel chair, and old age.

### Brainstorming

Brainstorming began with listing the exercises that are most efficient for the frozen shoulder. Next the cabinet was brainstormed and the circular form was finalized.





**The circular form is for the circular motion of the hand and the cabinet is rotating**

### **Final design**



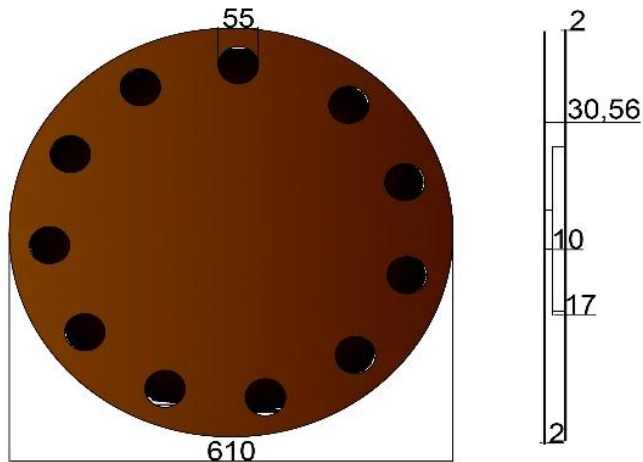
### **WORKING**

**The final design that solves the problem is that of a circular rotating kitchen cabinet that revolves on an axis and has cavity space to fit in the containers.**

**The user will hold the container and rotate the cabinet to bring to access the container in need, to the height from where the shoulder allows to raise the hand and bring out the container.**

**In this process the user is also exercising which as mentioned above is very important for the opening of the shoulder muscle and for free the movement. With this the task is also made easy as the container is bought to the height to which the hand can rise up at that particular time and with time as the movement increases the rotation can increase.**

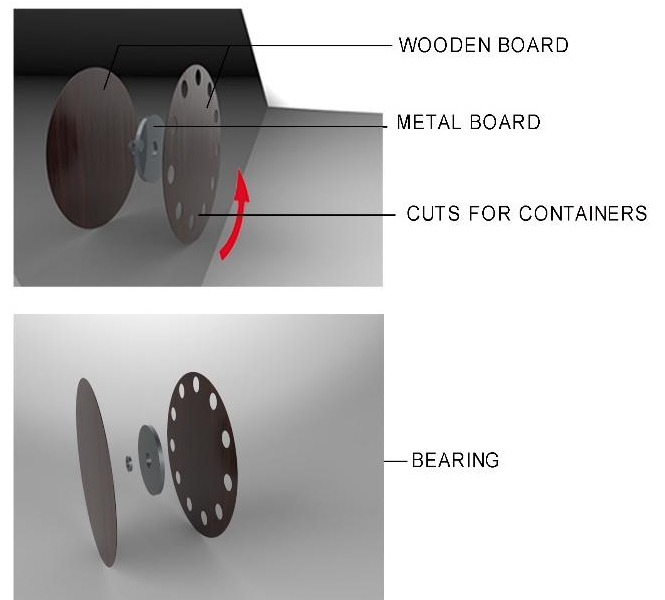
## Dimensions



The dimensions are set after a proper ergonomic study of the average fill rotation of the hand.

## Materials

The materials used for the cabinet will be wooden board as it is easy to make and the material can be further used. And bearing will be used for the movement of the board above.



## User group

This Kitchen cabinet is specially designed for ladies who are suffering from frozen shoulder and have difficulty in using the existing design of kitchen cabinets due to restricted shoulder movement.

Also, it can be used by older people, people in wheel chair and by people of all varied heights and everyone else which makes it INCLUSIVE

## **Advantages**

- 1. The cabinet is inclusive, can be used by all***
- 2. Helps in exercising***
- 3. Makes work easy***
- 4. Saves space in kitchen***

## **CONCLUSION**

**This research paper was written to showcase the design research, process and the implication of the design.**

**There were new findings about frozen shoulder, interviews of people suffering from it and with physiotherapist who play a major role in the cure of the disability.**

**There was understanding of the day to day problems faced by people suffering from frozen shoulder, limitations of people on wheel chair, old age and the limitations of the existing design of common cabinets in the kitchen.**

**With the help of these researchers and findings I was able to make the final product and did user testing on the product to understand the advantages, limitations and the changes to be made.**

**The users highly appreciated the product, the feedback was that the design helped free movement of the shoulder, it made the year easy for them and they exercised whenever they used it. Some said not they won't require physiotherapist.**

**In a nutshell the inclusive furniture was a success, it catered to the need of the people and the design fulfilled the aim and purpose of the study.**

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***Akriti Upneja ,Product Designer, Amity school of Design***

***I am always intrigued by human psychology. I tried to channelized my emotions into my designs, making my approach human centric in most ways***



***Arprit Upadhaya, Product Deign,( Bachelors in Design institute )***

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***A 22 years old product design student . Always looking for expanding his skill set and knowledge in the field of design . Interested in Fine arts and photography***



***Trisha Malakar, Product Design( Bachelors in Design , Amity University , Noida, UP India***

***A young designer who believes in the power of imagination and recognizes what it take to make a change in this world***



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***Amity University, Noida, UP, India***

***A creative individual with a curious mind and an interest in developing solutions to the obstacles in the world***

***Faculty Coordinator : Dr. Dipanka Boruah***

# **INCRESTA- Restaurant Table for All**

*Aakriti Upneja , Arpit Upadhyay , Siddhant Malhotra , Trisha Malakar*

*Amity School of Design Amity University B.Des (Product)*

## **ABSTRACT**

**Social isolation can affect anyone, but some people are more vulnerable to it than others such as the specially abled people. While each disabled person is unique in terms of the impairments and personal circumstances they face, loneliness is an experience that many disabled people will have in common and hence getting the right support is so important. Incresta was built on this foundation of thought. Living with a disability can create barriers to building social connections or having a social life in general, particularly practical issues such as difficulty accessing mobility aids, like a wheelchair, a walking stick; or communication barriers, all require social care. But a poor level of public understanding and awareness of disability is most often the biggest barrier to spending quality time with friends outside homes or making friends and finding common interests with others.**

## **KEYWORDS**

*Incresta, impairment, inclusion, visual, design, restaurant table*

## **INTRODUCTION**

**There are 7.8 billion people in the world, yet we often make things that are easily accessible usable for some people, and difficult for**

many. While accessibility is researched upon throughout the process of designing any product, we often lack in the aspects of social inclusion. Around 180 million people all around the world, between the ages of 10-24 live with a disability, consequential enough of changing their lives. The development of products and systems at present cater to fulfilling ground-level needs. Our aim is to cater to all needs an individual has, namely, the physiological, safety, belongingness, esteem needs, and self-actualization, broadly categorized under basic, psychological and self-fulfillment needs respectively. It is only when we focus on this hierarchy of needs identified by Maslow, that we can create an inclusive world. A world built on dignity and respect for all, with solidarity in its essence; a world where opportunities are equal, where distinctiveness is considered a pillar of strength, and not a divider. Such is the world we dream of living in.

Our initiative towards creating an inclusive world is through designing restaurant furniture for the special section of the society that has visual, vocal, or hearing impairment.

The furniture designed aims at making social inclusion a reality, than just a concept. In a survey conducted by the team, we learned that the said community avoids being a part of social environments such as restaurants and cafes since their special needs are not catered. How often do designers ignore the importance of a lovely family brunch at a nice restaurant? We believe every individual under the sky deserves it. Having said that, we made it our mission to bring about a change in environments as such, so that people with or without impairments can all coexist and feel specially catered to.



## **LITERATURE REVIEW**

**A disability is an impairment that can be cognitive, developmental, intellectual, mental, physical, sensory, or a combination of these. It substantially affects a person's life activities and may be present from birth or occur during a person's lifetime as a gradual process.**

**To be able to design an umbrella piece of furniture that would provide a universally accessible platform where no individual feels less welcomed, a lot of in depth research was required to learn about the challenges the specially abled community faces in their day to day life, so that an attempt to eliminate some of those challenges could be made.**

**While the inclusion of every single individual under the sky seems ideal, it is impractical to account for each unique difference that exists among human beings, considering, each individual is different from another; and then to further cater to every one of those differences. Therefore, it was imperative that one or a few special abilities be chosen as the focus of our design considerations, and yet attempt to make the furniture piece accessible for the mass.**

**Keeping the above said in mind, we narrowed down to visual, vocal and hearing impairments as our subject of study and emphasized on those for our problem solving. The Census 2011 revealed that 19% of the Indian population with disability has a visual impairment, another 19% has a hearing impairment and 7% of the said population has a vocal impairment. [1] (*Verma, D. et al. (2016). Disabled Persons in India.*) With such a big fraction of the population having special needs, it's imperative to emphasize social inclusion as the right path to a more inclusive and sustainable development.**

## **Challenges faced by the specially-abled population in India**

**A. Inaccessibility-** *Majority of the public places like buildings and offices are inaccessible for this population still.*

**B. Low Representation-** *The specially abled population usually do not have many representatives in fields like government jobs, politics, economy etc. in proportion to the other population.*

**C. Barriers to Health Care-** *The most significant barrier to health care is the insufficiency of suitable services for the visually impaired, mute and deaf. The inability to bear the expense of medical aids provided and travel freely are two of the most major reasons why people cannot receive needed health care.*

**D. The Education System is Still not Inclusive-** *The faculty of schools are not trained and educated well enough with the knowhow of special abilities and the aids required by the said communities. In addition to that, school buildings are also not accessible. The curriculum is also ignorant to differences among individuals and thus, special abilities like visual impairments are not considered while framing the curriculum. Hence, the said community can only access the special schools set up just for them, but unfortunately, not a lot of blind schools exist in India.*

**E. Attitudinal Barriers-** *Attitudinal barriers which are characterized by stigmatization and discrimination deny the specially abled their dignity, which is the fundamental need for any individual, and helps a person build one's identity; and potential and are one of the greatest obstacles to achieving equality of opportunity and social integration.*

**F. Limited participation opportunities:** *Access to information*

*and knowledge is hampered due to inaccessible communication systems, which in turn limits one's opportunities to participate. Deficiency of services or faulty service delivery also restricts the participation of people.*

***G. Institutional Barriers-*** *Institutional barriers include many laws, policies, strategies or practices that discriminate against the said community. Discrimination may not be intended but systems can indirectly exclude people with a disability by not taking their needs into account.*

***H. Inadequate Data & Statistics-*** *The lack of rigorous and comparable Data and statics, combined with a lack of evidence on a program that works, lack of planning, often delay in understanding and actions on disability inclusion.*

***J. Poor Implementation-*** *Poor implementing policies and plans can prevent the inclusion of people with blindness. [2] (prepze.com, 2017.)*

**Disability is conceptualized as being a multidimensional experience for the person involved. There may be effects on organs or body parts and there may be effects on a person's participation in areas of life. Correspondingly, three dimensions of disability are recognized in ICF: body structure and function (and impairment thereof), activity (and activity restrictions) and participation (and participation restrictions). The classification also recognizes the role of physical and social environmental factors in affecting disability outcomes.**

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1. ***Vision***
2. ***Hearing***
3. ***Thinking***
4. ***Learning***
5. ***Movement***
6. ***Mental health***
7. ***Remembering***
8. ***Communicating***
9. ***Social relationships [3] (disabled-world.com, 2019)***

**Disability can be:**

- **Related to conditions that are present at birth and may affect functions later in life, including cognition (memory, learning, and understanding), mobility (moving around in the environment), vision, hearing, behavior, and other areas.**

**These conditions may be**

- ***Disorders in single genes (for example, Duchenne muscular dystrophy);***
- ***Disorders of chromosomes (for example, Down syndrome); and***
- ***The result of the mother's exposure during pregnancy to infections (for example, rubella) or substances, such as***

*alcohol or cigarettes.*

- **Associated with developmental conditions that become apparent during childhood (for example, autism spectrum disorder and attention-deficit/hyperactivity disorder or ADHD)**
- **Related to an injury (for example, traumatic brain injury or spinal cord injury).**
- **Associated with a longstanding condition (for example, diabetes), which can cause a disability such as vision loss, nerve damage, or limb loss.**

**Progressive (for example,), static (for example, limb loss), or intermittent (for example, some forms of multiple sclerosis). [4] (<https://www.cdc.gov>, 2017).**

**The main categories of disability are physical, sensory, psychiatric, neurological, cognitive and intellectual. Many people with disability have multiple disabilities.**

**A physical disability is the most common type of disability, followed by intellectual and sensory disability. Physical disability generally relates to disorders of the musculoskeletal, circulatory, respiratory and nervous systems.**

**Sensory disability involves impairments in hearing and vision.**

**Neurological and cognitive disability includes acquired disability such as multiple sclerosis or traumatic brain injury. Intellectual disability includes intellectual and developmental disability which relate to difficulties with thought processes, learning, communicating, remembering information and using it**

appropriately, making judgments and problem solving. Intellectual disability is the result of interaction between developmentally attributable cognitive impairment, attitudinal and environmental barriers. Psychiatric disorders resulting in disability may include anxiety disorders, phobias or depression. [5] (<http://www.disability.wa.gov.au>, 2018).

## **METHODOLOGY**

The research process started with the selection of a non-probability judgmental sample where we picked out the samples based on our own knowledge and a certain idea about the topics chosen.

The initial step was carried out while observing the samples on a day to day basis and gathering information about the activities and the problems that they face.

While collecting data for the same, we also carried out an experiment where we took one of our partial visually impaired acquaintances to a restaurant to see the struggles they encounter while interacting with the environment for the same.

Various observations were recorded during the time of the experiment, which include the following:

- *There was a definite resentment and hesitation after listening to the idea of going out to eat.*
- *Anxiety issues arose when we reached there.*
- *He was very dependent on us to choose from the menu and required some assistance as well.*
- *Lack of independency made him choose the second dish we read out as he was embarrassed by it.*
- *Hesitation while asking for extra things such as spoons, forks, tissues etc.*

**Certain communication difficulties as well as resentment due to the taboos created by the society, people usually hesitate to go out to public spaces and interact with the environment.**

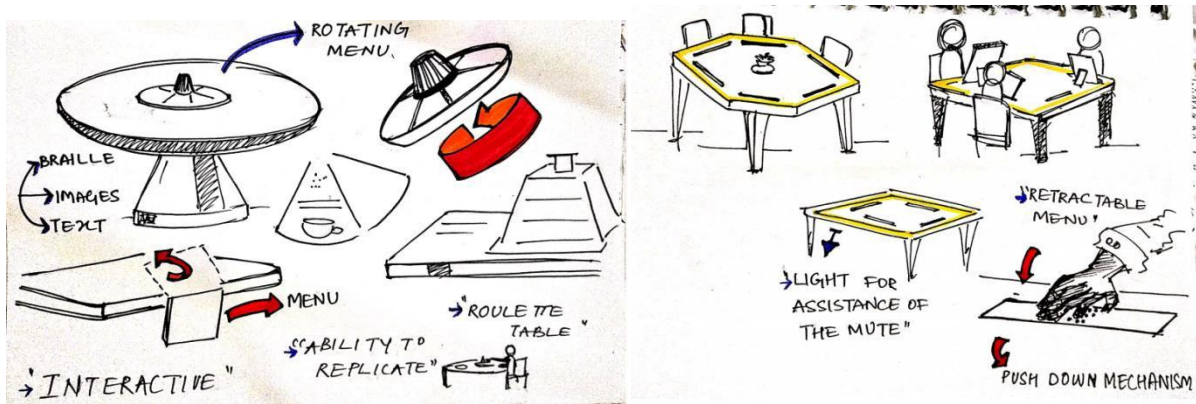
**Also, due to the lack of facilities for the visually impaired as observed during the experiment, the social situation sometimes gets awkward for the person in need of assistance so our thinking was to make these people more independent and not having to think twice before going out with their families and friends.**

## **PROCESS**

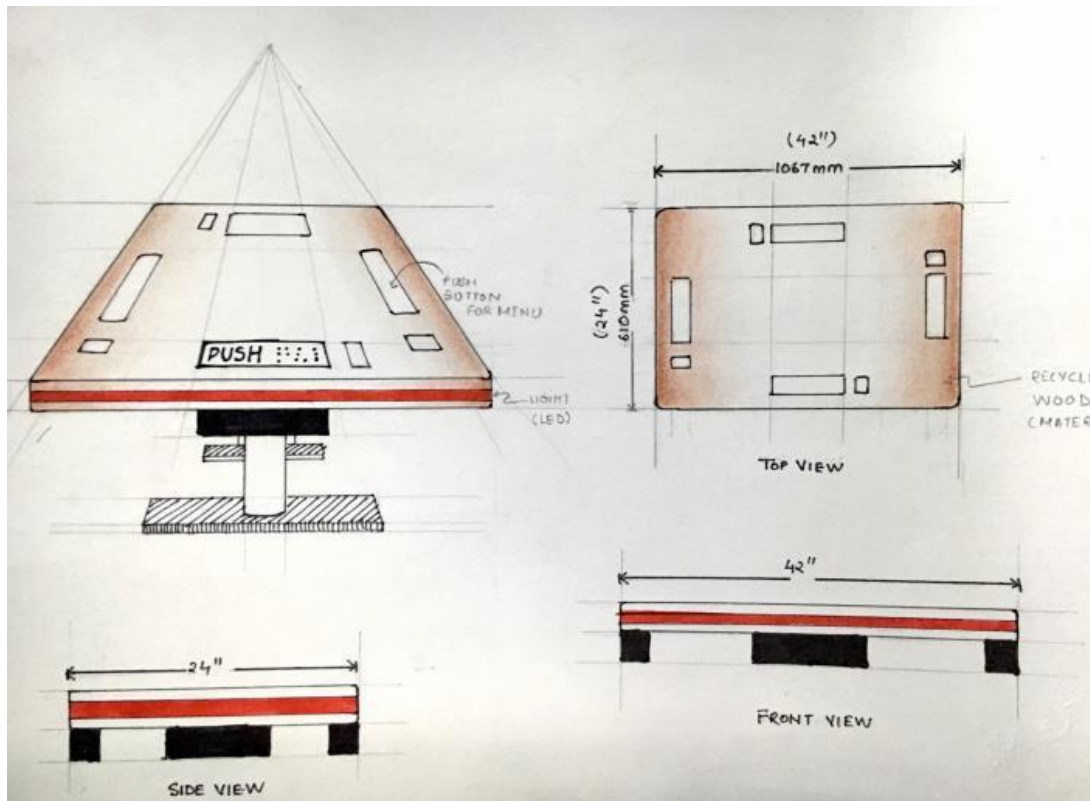
**The idea of Incresta came into being when the need to bridge the social gap between the abled and the specially abled communities was brainstormed. The team dwelled into the idea of making social environments warmer and more welcoming, which further made interpersonal interaction easier for the target audience. We finally with unanimous consensus decided to design a restaurant table, since spending quality time with family and friends is one of the most precious forms of social interaction, and what better way of indulging with the loved ones than having a meal in a restaurant that doesn't discriminate?**

**While we brainstormed the incorporation in many different ways, of features that helped us achieve an inclusive design for social environments that is accessible by masses, the set of elements that we wanted to integrate in the restaurant table remained the same.**

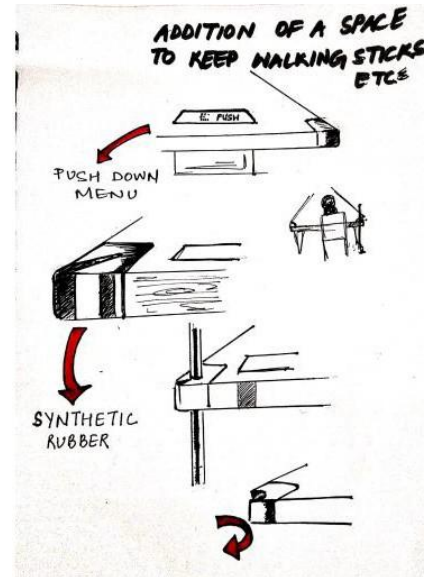
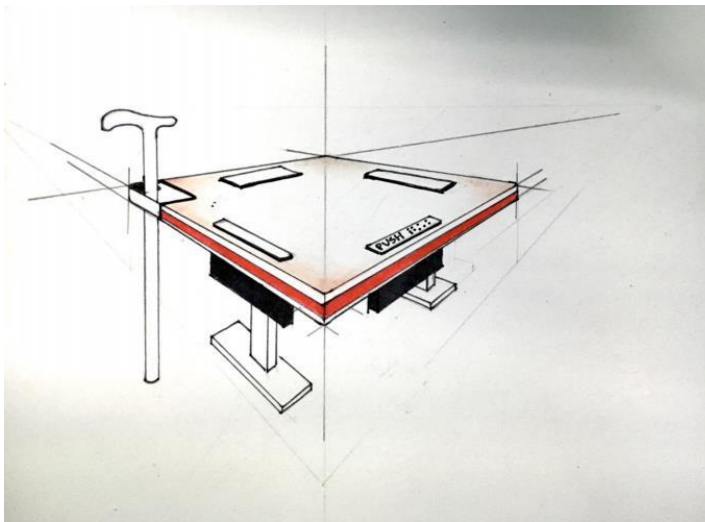
**Brainstorming-**



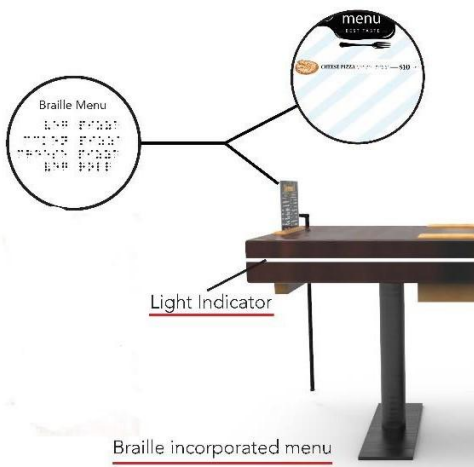
**Final concept-**







## Renders:



The restaurant table we have designed comes incorporated with a menu card that when pushed, pops up in front of the guest. The menu is written in Braille, simple English, and also depicted through photographs and illustrations so as to make it understandable for all. Once decided what to order, the menu can retract down into the

**table, making the surface of the table free of obstruction.**

**To indicate that the table needs assistance, the button provided on the table can be pressed to light the table up. This ensures that one doesn't require calling out the attendant to place the order or raise concerns. To cater to our visually impaired audience, the word "PUSH" has been embossed on the rectangular panel.**

**Another minor yet important feature of the restaurant table is the bracket that is attached on all four sides of the table. The bracket provided can be used to clip walking sticks used by the old and visually impaired, and also crutches for the population that carries them.**

## **DESIGN IMPLICATIONS**

**With our designed restaurant table for all, we aim at eliminating the social gap between the specially abled and abled sections of the society. Our focus on restaurant spaces arose out of the concern that a social activity as simple as eating out with friends and family is avoided by the said population since they feel excluded and different.**

**Incresta has the possibility to go beyond a restaurant table. The table also has a scope for replication in the form of boards with all the specified features in areas such as supermarkets, movie theatres, bus stands, railway/metro stations, etc., to make these areas more accessible for the said population. As an example, shopping in supermarkets is practically difficult for the visually impaired. Providing a board at the entrance of the grocery store that has all the available products written in Braille will help them choose at one place, whatever they wish to buy. They can light the board up**

using the button provided to call for assistance and the attendant can then guide them towards the chosen products.

- *This not only allows an individual to have a sense of independence but to provide him or her with a sense of social belonging.*
- *Incresta will help the target audience to cope with their social anxiety. A series of eight clinical cases prove that patients suffer from excessive levels of secondary social anxiety relative to their disfiguring or disabling physical conditions.*

[6] (<https://www.ncbi.nlm.nih.gov> 1994).

By providing three types of communication methods on the menu as well as on the table, the risk of panic and humiliation is stamped out.

- *Incresta comes with four built in sectional corners made of hard silicon to clip customer's walking sticks and crutches.*
- *The silicon edges of the table have been designed keeping in mind the risks of getting hurt while navigating through the restaurant.*
- *The sides of the table have integrated led lights which light up when the customer wants to call the server or communicate any need. The feature is specifically helpful for the mute audience who face communication barriers in public places.*
- *In addition to this, the Led lights enhance the interiors of the restaurant as well.*
- *And lastly, this inclusive table serves as an interactive experience at a restaurant for the abled community too.*

## **CONCLUSION**

**A disability affects an individual in more ways than we can imagine. While products for physical accessibility might exist, we happen to ignore a very basic need of this population-the need of belongingness and social acceptance. With Incresta, our vision is to create a more inclusive environment for the specially abled population, one where their daily activities are just as normal as anybody else's, where an individual can go out for dinner with their family and friends and not feel dependent on anybody else. To plant a sense of independence, individuality and social inclusion, Incresta is a sustainable and interactive table for all.**

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**KHOOBI GAUR**

***A final year product design student of Amity school of design on a mission for crafting social change through design intervention.***

***A keen eye for detail and problem solving approach has helped me take ideas from paper to products. Research,development and problem solving skills along with techniques such as sketching rendering and rapid prototyping enable me to come up with cutting edge products.***



**GARIMA THAKUR**

***I am a Product Design student of Amity School of Design who is highly motivated to come up with innovative solutions in polite and colourful designs, profoundly inspired by nature and wide range of material explored. Can turn up with innovative market strategies. Flexible to translate emerging trends into successful designs.***



**PRACHI GAUTAM**

***I'm a 21 years old Product Designer from Noida, India. I strongly believe to create something sterling one must set their mind free and let it come up with ideas that are fresh, unique and innovative. Pursuing bachelors in Design has helped me evolve as a person. Now I try to design new products or improve existing ones to help mankind in any possible way. Every day is an opportunity for me to learn and experience new things as a designer, Everything I do, I try to be a better designer and a better person as a whole.***



# **PEDSTOOL: A Seating for All**

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***Guided by: Dr. Ekta Singh***

## **Abstract**

**Our goal is to bridge the gap between abled and specially-abled communities with an inclusive approach. This piece of furniture integrates people suffering from unipedalism or leg amputation into society so that they do not feel secluded. This design also caters to the needs of the elderly. People with these kinds of disability use various aids like crutches, walkers, single sticks etc. While traveling it becomes difficult for them to keep and hold their Aids.**

**Keywords: *Inclusive Design, Universal, Unipedalism, Amputation, Seating, Furniture, Product Design***

## **Introduction**

**Every design choice has the capability to include or exclude customers. Inclusive design emphasizes the contribution that information consumer diversity makes to informing these selections, and as a result to consisting of as many humans as possible. User diversity covers variation in capabilities, wishes and aspirations.**

**The British Standards Institute (2005) defines inclusive design as: 'The design of mainstream products and/or services that are**

**accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design.'**

**Inclusive design does not suggest that it is always possible (or appropriate) to design one product to address the needs of the entire population. Instead, inclusive design guides an appropriate design response to diversity in the population through:**

- ***Developing a family of products and derivatives to provide the best possible coverage of the population.***
- ***Ensuring that each individual product has clear and distinct target users.***
- ***Reducing the level of ability required to use each product, in order to improve the user experience for a broad range of customers, in a variety of situations.<sup>1</sup>***

**In the context of product design, each 'Design for all' and 'Universal layout' strategies pragmatically take delivery of that it isn't always viable for one product to meet the needs of the entire population. Nevertheless, these processes hold that everyone mainstream product should be handy to as many humans as technically feasible.**

**Keeping inclusivity in mind, our seating focuses on a disability called Unipedalism.**

**The term uniped (from Latin *uni* = one + *ped* = foot) refers to a person or creature with only one foot and one leg, as contrasted with a biped (two legs) and a quadruped (four legs). Moving using only one leg is known as unipedal movement. Many bivalvia and nearly all gastropoda molluscs have evolved**

**only one foot. Through accidents (i.e. amputation) or birth abnormalities it is also possible for an animal or a human being to end up with only a single leg.<sup>2</sup>**

**Amputation is the surgical removal of all or part of a limb or extremity such as an arm, leg, foot, hand, toe, or finger.**

**The purpose of this design is to sensitize with the specially abled community and increase the scope of product design.**

**Our goal is to bridge the gap between abled and specially-abled communities with an inclusive approach.**

**This piece of furniture integrates people suffering from unipedalism or leg amputation into society so that they do not feel secluded. This design also caters to the needs of the elderly.**

**People with these kinds of disability use various aids like crutches, walkers, single sticks etc. While traveling it becomes difficult for them to keep and hold their Aids.**

**It has multiple benefits like a crutch stand, a handrail to ease the movement of the users while lowering on to the furniture piece and help them balance their body weight.**

**This design aims at making public furniture more accessible to people who are suffering problems related to the lower body. An amputation, especially a major amputation, can affect all aspects of an individual's life. Not only their physical life but also their emotional, psychological and social life is effected.**

**These kinds of people feel socially isolated while carrying their aids because society looks upon them differently. There aids act as a social hindrance and communication barrier.**

**The main challenge is to design furniture which helps them feel self-sufficient in different social settings.**

**One of the other important consideration reduces the dependency of these people on other commuters.**

## **Literature Review**

**In discussing amputations of the lower limb, we've noted that each level has its own specific characteristics and challenges. As we move higher in the leg the more joints are affected. A transtibial amputation involves the loss of the foot and one major joint, the ankle, while the transfemoral amputation involves the loss of two major joints, the knee and the ankle. Because transfemoral amputees are learning to cope with the loss of two major weight-bearing joints while transtibial amputees are learning to cope with the loss of only one, transfemoral amputees face more challenges learning to use a prosthesis and learning to walk again.(Smith , 2005 )**

**An amputation, especially a major amputation, can affect all aspects of an individual's life. Not only their physical life but also their emotional, psychological and social life is also affected**

**The first tasks are adapting to simple mobility and self-care without the amputated extremity or extremities. This can range in difficulty depending on the number of amputations and their locations, as well as the overall health of the individual before and after the amputation(s). Physical Therapy is big part of helping the individual achieve these tasks, though the physical adjustment to losing a limb can be a difficult and long process.**

**There can be psychological and emotional difficulties with adjusting to life as an amputee. Some may go through a grieving period for their lost limb similar to a grieving period for a deceased loved one. There may be "phantom pain" where the individual feels pain where the limb would be. Amputees may experience difficulties with body image and depression. Counseling and support groups are a good way to tackle some of these issues.**

**Social isolation can be a problem that amputees face. Sometimes it is the fear of what other people will think about them, other times it's concerns over not being mobile or independent enough, which can lead to concerns that they will just be a hindrance in a social setting. There are many organizations that specialize in amputee sports and recreation as well as support groups and social groups to help with the above mentioned concerns.**

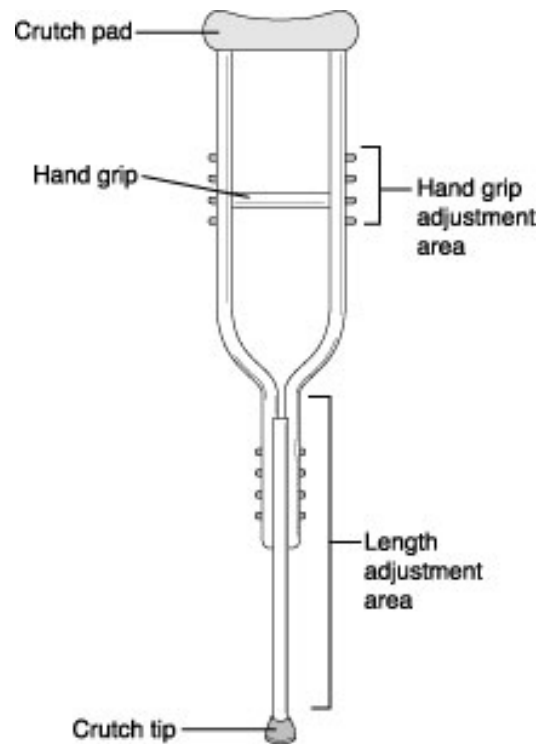
**There are additional medical concerns to be considered when dealing with an amputation. There can be concerns of heart complications because of a difficulty of the heart to effectively pump blood through the body. There are always concerns of infection at the amputation site which could also result in Sepsis.**

**Amputees face many challenges after the initial amputation(s), but they are not all just physical challenges and some of them last a lifetime. There are, however, people with amputations in every walk of life. Life is not over because of an amputation.<sup>3</sup>**

**Crutch pad distance from armpits: The crutch pads (tops of crutches) should be 1½" to 2" (about two finger widths) below the armpits, with the shoulders relaxed.**

**Handgrip:** elbow is slightly bent—enough so the user can fully extend the elbow while taking a step.

**Crutch length (top to bottom):** The total crutch length should equal the distance from your armpit to about 6" in front of a shoe.<sup>4</sup>



## Methodology

### Research Design

An exploratory research approach has been chosen since this research would help us in having a better understanding and obtain a clarity about the product (ie., pedstool- sitting for all) that has been designed for a compition. The research objectives have been explored with varying levels of depth since this is an initial research which will prove to be of great help for conclusive research.

### Data Collection

Data collection is aimed to gain insight about the research problem by exploring and understanding the phenomena hence a quantitative approach of data collection has been taken.

A few surveys for the focused group have been taken into consideration.

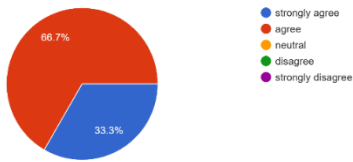
There are difficulties while travelling in public transport.

3 responses



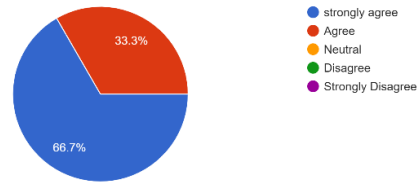
It is difficult to balance yourself in public transport like metros, buses , trains , autos , manual rikshaws etc.

3 responses



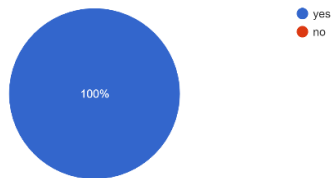
You try to seek help from others to help you access public spaces.

3 responses



Do you feel it is difficult for you to get up from a seat and balance yourself with your crutches / walkers / prosthetics etc?

3 responses



What problems do you face while interacting with the furniture around you?

3 responses

it is not user friendly

Difficult to sit and stand on chairs , difficult to walk up and down on staircase

Not comfortable

Which furniture with respect to public transport has a scope to be redesigned keeping in mind your needs and problems? (auto, metro , bus seating etc. )

3 responses

public seats, escalators, staircases

Seats in public transport

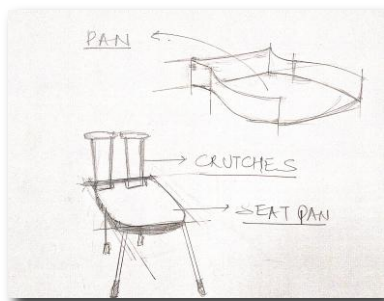
Cabinets, cafeteria seatings



## Process

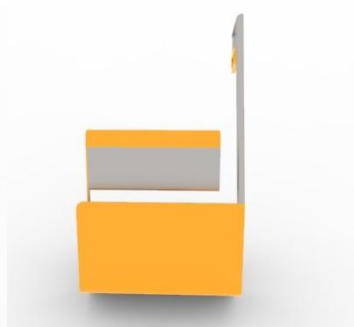
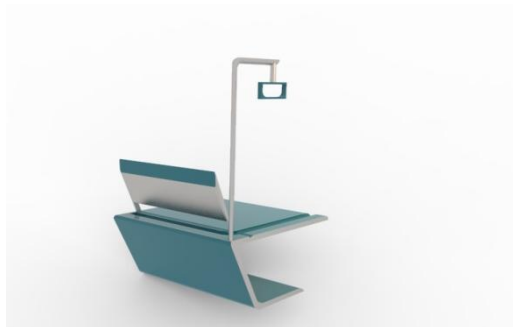
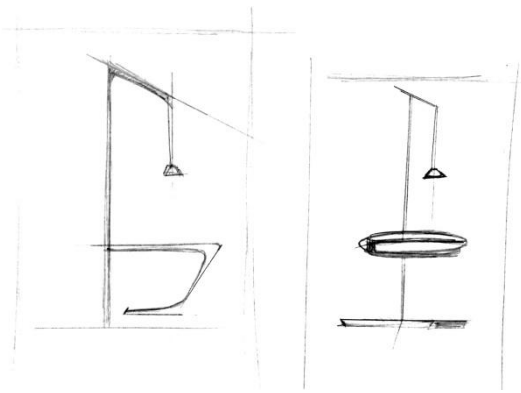
**Inclusive design is essential for the creation of products that satisfy user needs and aspirations and can be differentiated from what is already there. To reap the full benefits of the design it is essential to follow a systematic approach and process.**

**The process starts with brainstorming on the idea to design a stool which integrates people suffering from disabilities into the society so that they do not feel secluded from others. Form exploration helped us in exploring different types of benches, seats and mechanisms.**



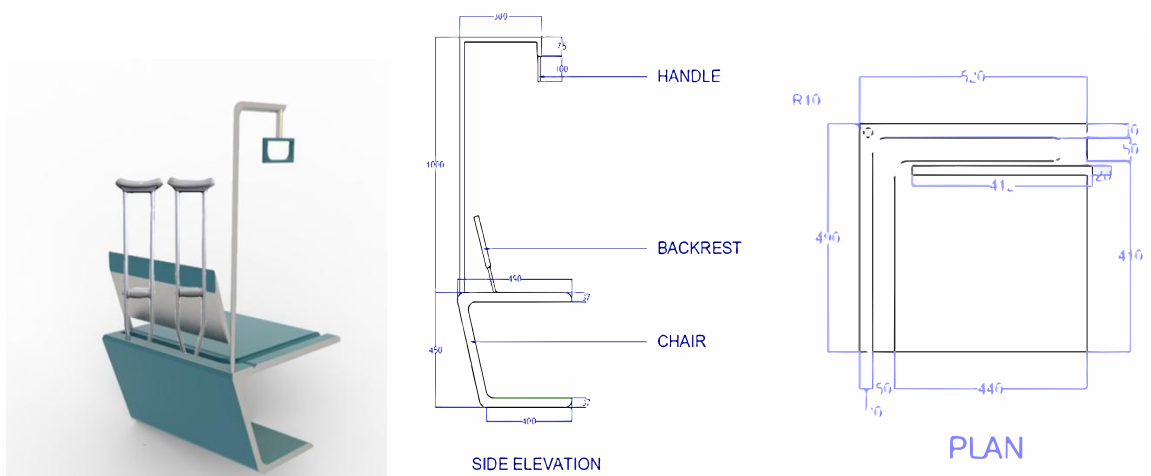
## BRAINSTORMING

The final idea chosen is a Stool cum bench designed for social gatherings which is inclusive for everyone and people with unipedalism can keep the crutches at the back of the stool. They get the space for keeping their crutches which they usually don't get when they sit somewhere they always have to keep them in their hand or keep aside.



## Final Concept

This design aims at making public furniture more accessible to people who are suffering problems related to the lower body and reduces the dependency of these people on other people and increases their confidence.



## Materials

### Fibre glass

Fibre-reinforced polymer (FRP), also Fibre-reinforced plastic, is a composite material made of a polymer matrix reinforced with fibres. The polymer is usually an epoxy, vinylester or polyester thermosetting plastic, and phenol formaldehyde resins are still in use. [Masuelli , 2013]

It is basically reinforced plastic material composed of glass fibers embedded in a matrix of resin.

## **Why Choose Fiberglass over other materials:**

**Strong and long-lasting:** Pound for Pound fiberglass is stronger than sheet metal. Fiberglass has a high resistance to corrosion, it will not rust. Perfect for products used outside, in states near the ocean, with the high salt content in the air. Fire-retardant resins can make your products stand up against fire and will only char not burn up. Perfect when products will be around corrosive material.

**Design Freedom:** There are very few restrictions with molding fiberglass, giving the engineer unlimited possibilities. Get away from the old boxy looking products and design visually appealing ones that are still as structurally strong and durable. Can take a multi- part and convert it into just one.

**Appearance:** Using fiberglass for product covers and enclosures definitely improves its aesthetics. Achieve any look and feel desired. Finishes give fiberglass components a high tech appearance.

**Cost Effectiveness:** Lower costs for maintenance and warranty work. A lighter and stronger product results in lower costs for shipping and storage.

**Color:** Since fiber reinforced polymer components are molded, color can be molded straight through the part. For more traditional materials, a combination of paints, stains, and coatings must be used and will require periodic re-applications. A wide range of colors are available.

## **Stainless Steel**

**A type of metal product that is more resistant to rust, staining and corrosion than regular steel. It is an alloy of iron and carbon.**

**Stainless steel is often found in materials used in construction and tools. <sup>5</sup>**

## **Steel- (for framing)**

**Steel is an alloy of iron and carbon, and sometimes other elements.**

### **Why steel over other materials:-**

#### **Aesthetic**

**steel is an incredibly dynamic material that can be shaped and finished in unique ways. Durability, steel frames offer an impressive level of durability, making it sound a good investment. While wood can break and splinter, joints are the most common area where damage occurs.**

**In addition, steel is an incredibly strong material that is a popular choice for constant use, high traffic areas. Ultimately, if durability is your top priority, then steel is the best choice.**

**Cleaning, while both wood and steel frames are easy to clean and simply need to be wiped down, steel tends to be more resistant to bacteria, pests and other contagions that have the tendency to accumulate in high traffic areas.**

**Ultimately, steel is the most low-maintenance option that will help keep your employees and visitors healthy. You can use practically**

any type of cleaner and wipe down the furniture on a daily basis without worry about damaging the finish.

**Flexible Design,** steel offers practically limitless design options. **Sustainability,** steel is also highly recyclable. It can easily be melted down and reshaped into any variety of products.

## **Implication**

- 1. Ergonomically designed** – the dimensions of the pedstool are carefully decided keeping in mind the seat height from ground, positioning of the backrest, pan depth and the height of the handrail.
- 2. Pull up handle for support-** a handrail which is provided for support and helps the person to get up from the seat.
- 3. Slide in aid storage on the seating pan-** the crutches can be slided into the pan groove when the person is sitting. It helps the user keep his or her hands free.
- 4. Seating for all-** this seating is also useful for elderly people who carry a walking stick along with them. They can also use the aid storage space to keep their walking stick. The handrail helps them to seek support while getting up from the stool. This stool can be used by normal people for sitting.
- 5. Helps in balancing their body** – the handrail ensures that the person does not trip or fall while standing up from the stool.
- 6. Helps them feel self-sufficient in different social settings-** the user does not require any help from other people

for helping the carry or hold the crutches or walking stick while they are getting up or shifting their body weight as the seat provides them with a designates storage space and body balance handrail.

7. It reduces the communication barrier in social scenarios- managing the crutches becomes difficult and cumbersome in public transport and various other social scenarios. The entire focus of the person shifts on holding the aid and the person finds it difficult to interact with people around him/her.
8. The seating also reduces the dependency of these people on other commuters and increases their confidence.
9. Helps to balance their body while standing up.
10. Reduces the hinderance caused by the crutches to other people.

## **Usage**

Pedstool is a smart seating designed in a manner that enables us to use it in different social settings.

It can be installed at various places like

- *Metro stations*
- *Metros*
- *Buses*
- *Parks*
- *Cafetarias and bars*
- *College canteens*
- *Parks etc.*



**As a Bench**



**As a Stool**

## **Conclusion**

**After completing the research, we have come to a conclusion that they were not many products available for people living with unipedalism, which urged us to design a product keeping in mind the comfort and accessibility for the target audience and which can also be used by every person. Hence, it is an inclusive furniture design, made for the people disregarding their physical abilities.**



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## **ABSTRACT**

Handicap might be characterized as the outcome of an impedance that might be physical, psychological, mental, tangible, formative, or a blend of these that outcome in confinements on a person's capacity to take part in what is considered "ordinary" in their regular society [1]. Their detriment rises above a few circles. Sensory Processing Disorder (SPD) is where multisensory reconciliation isn't satisfactorily prepared so as to give suitable reactions to the requests of nature. This disability was chosen because it is a very invisible condition to be suffering from, contrary to some other disabilities in which the non-disabled population are sometimes aware of what the disabled person is suffering from. The vast majority don't have a clue about how to help these children since they don't fall into a conventional clinical gathering[2]. So many people are ignorant about a disease like SPD, in fact, most children suffering from spd are dismissed as problematic restless kids who do not play well with others. Also, not a lot has been done in furniture design when it comes to children suffering from SPD.

## **INTRODUCTION**

**All inclusive Design is the plan and piece of a domain with the goal that it very well may be gotten to, comprehended and used to the best degree conceivable by all individuals paying little heed to their age, size, capacity or inability[3]. A domain (or any structure, item, or administration in that condition) ought to be intended to address the issues. This is certainly not a unique prerequisite, to support just a minority of the populace. It is a crucial state of the good structure. In the event that a situation is open, usable, helpful and a joy to utilize everybody benefits. By considering the different needs and capacities of all through the planned procedure, the widespread structure makes items, administrations and conditions that address people groups' issues. Basically, an all-inclusive structure is great to plan.**

**Tangible preparing alludes to the manner in which the sensory system gets messages from the faculties and transforms them into reactions. For those with Sensory Processing Disorder, tactile data goes into the mind yet does not get sorted out into suitable reactions. Those with SPD see and additionally react to tactile data uniquely in contrast to most other individuals. Not at all like individuals who have debilitated sight or hearing, those with Sensory Processing Disorder do distinguish the tactile data; regardless, the unmistakable information gets "worked up" in their psyche and thusly the responses aren't right in the setting in which they get themselves.**

**An increasingly formal definition is: SPD is a neurophysiologic condition in which tangible in-formation either from nature or from**

one's body is ineffectively identified, adjusted, or deciphered and additionally to which atypical reactions are watched. SPD is like a neurological "traffic jam " that keeps certain pieces of the mind from accepting the data expected to translate tangible data accurately.

The Title of the project is Jocodeen which is short Jouer Comme Des Enfants (which translates to play like children). Instilling the habit of actually playing like children (indulging in physically active play) is one of the purposes of this design.

## **LITERATURE REVIEW**

Review of the existing literature has revealed that Unusual sensory processing has been widely reported in autism spectrum disorders (ASD) [4]. Although it may also develop in children who don't suffer from disorders that fall under (ASD). It affects 5-16% per cent of school-aged children.

It has been estimated that 5 to 15 per cent of all children have some form of Sensory

Processing Disorder and that 40 to 85 per cent of these children have already been diagnosed with another disability (Miller, 2006, p. 283) [5]. Now even though that stats in the existing literature state that this disability is quite prevalent among the youth of it was has been started diagnosed in the last decade or so, hence the fact the people are ignorant about it and medical professionals are still sometimes hesitant to give this as a diagnosis since this disability/disorder is also not recognised in the Diagnostic and Statistical Manual. Since the people are ignorant and medical

professional are hesitant, so the designers and manufacturers are not really doing much for making products and solutions for people suffering from this disorder.

Children suffering from this disorder maybe have overactive or underachieve senses. Kids who are tactile craving, "have an almost unsatisfiable wanting for tactile encounters and effectively look for sensation, frequently in manners that are socially unsatisfactory," (Miller 2006, p. 28) [6].

The treatment for this disorder includes sensory stimulation and sensory integration to feed the sensory diet of a child suffered from SPD. Sensory integration refers to skills and performance in developing and coordinating sensory input, motor control and sensory feedback in a smooth and controlled process, for use in behavioural responses," (Wright, 2010) [7].

## **PROCESS**

### **Aim:**

To develop a universal furniture piece for children keeping in mind sensory processing disorder.

### **Purpose :**

Disabled individuals account for about one-sixth of the Medical caseload but more than one-third of program expenditures. Yet, little is known about the health needs of disabled beneficiaries and their experiences (Long et al., 2002 ) [8]. The disabled population

that I wanted to give an opportunity to feel included when it comes to designing furniture were children suffering from (SPD) Sensory Processing Disorder. Sensory processing is a condition in involves being stuck in an unfortunate situation getting and reacting to data that comes in through the senses. Children who suffer from this condition usually have various problems in interacting with their environment and people around them, they tend to take these problems with them into adulthood if they aren't taught how to cope with their unique condition. Examples include: Common sounds may be painful or overwhelming to children suffering from SPD. The light bit of a shirt may abrade the skin.

Others with tactile handling issue may:

- *Be clumsy*
- *Catch things*
- *Be unfit to tell where their appendages are in space*
- *Be difficult to take part in discussion or play*

The purpose of my inclusive design playhouse is :

- *To provide children who are suffering from spd and also to those who aren't, a way to hone their tactile sensory stimuli intake process through the use of active play*
- *To get children of today's generation off of digital devices and to promote physically active play*
- *To provide children with a fun activity zone to play and grow within their homes*

## **Proposed Framework :**

**The proposed inclusive furniture design solution is a playhouse that parents can put in their homes for children from the ages of 4-10. The proposed playhouse includes a table for children to work and play on with drawers that are actually game elements that promote tactile play through the game of treasure hunt, the drawers are assembled in the form of stairs that lead up to the table. The walls of the playhouse include a lego wall and mystery window for added tactile stimulation. The floor is made up of fake grass. There are many other elements in the playhouse that promote tactile stimulation and thus help children get used to tactile sensations of all kinds.**

## **Design Rationale :**

**The disability was chosen because it is a very invisible condition to be suffering from, contrary to some other disabilities in which the non-disabled population are sometimes aware of what the disabled person is suffering from. So many people are ignorant about a disease like SPD, in fact, most children suffering from spd are dismissed as problematic restless kids who do not play well with others. Also, not a lot has been done in furniture design when it comes to children suffering from SPD.**



# Jocodeen

Playhouse for Children

Sensory processing disorder is a condition in which the brain has trouble receiving and responding to information that comes in through the senses. Children who suffer from this condition usually have various problems in interacting with their environment and people around them, for example they aren't very touchy or simple rough shirt fabric chaffs their skin.

**Jocodeen: Jouer Comme Des Enfants** (which translates to play like children) is a playhouse that helps children suffering from SPD and normal children get used to various kinds of tactile stimulation and it also promotes active play and work.

Option of stairs and table to promote active play and work

Optional mystery window so that children get used to unknown tactile stimuli.

Lego Wall for Tactile simulation

Treasure Hunt in Drawers with the use of Kinetic Sand

Treasure hunt in drawers with the use of slime

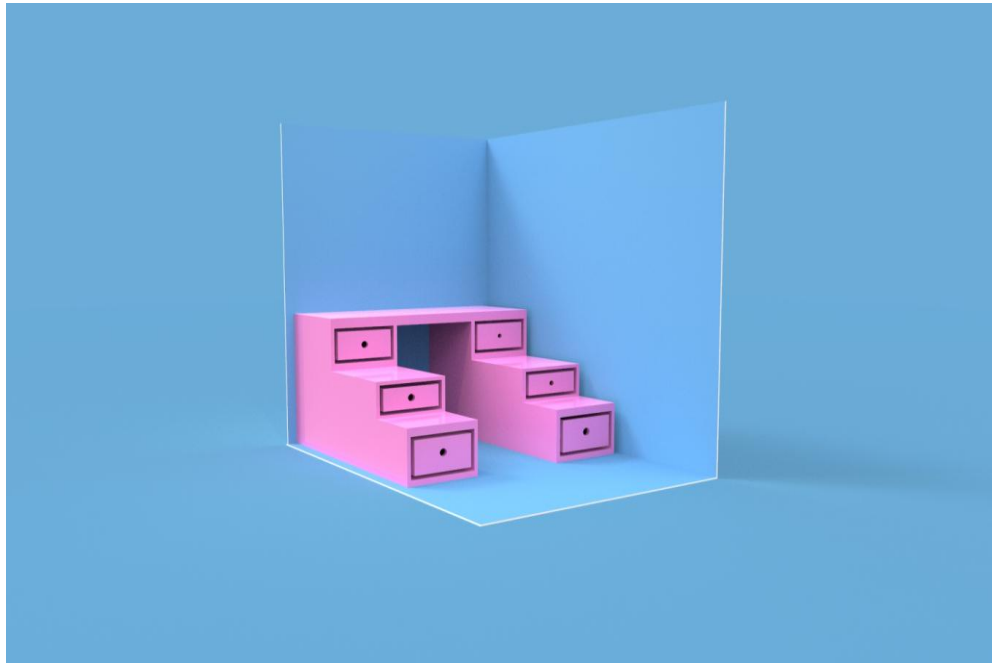
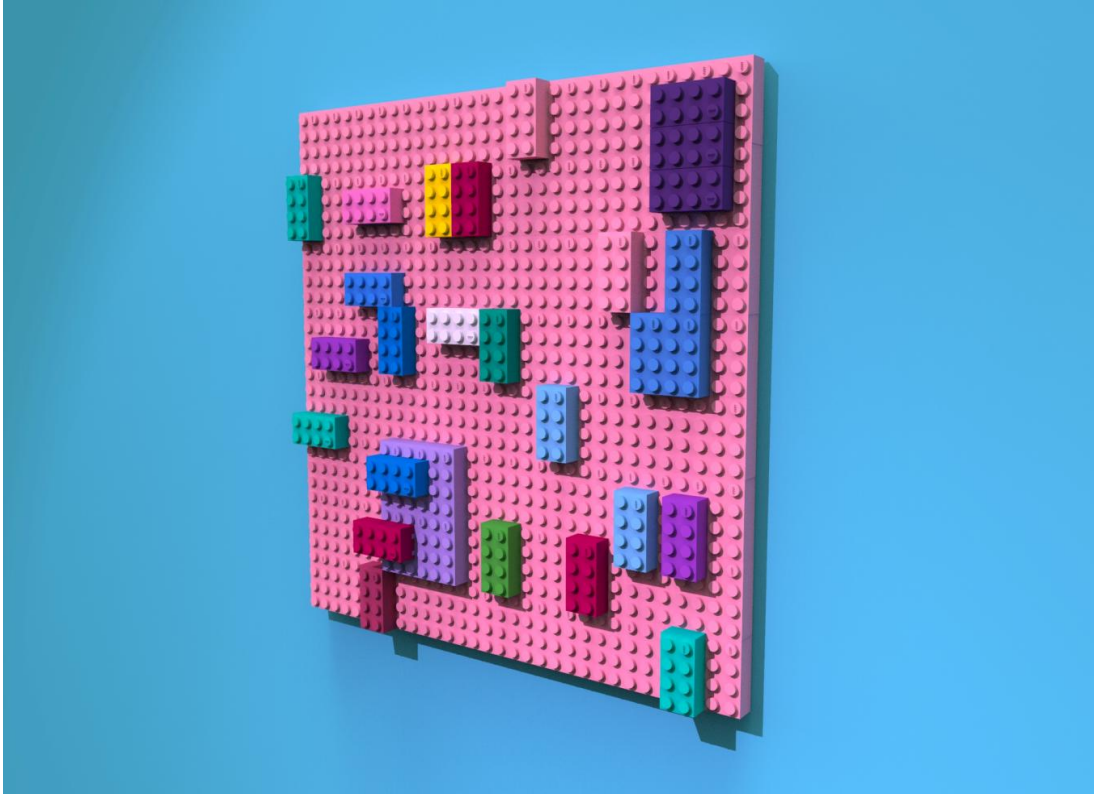
Option of grass turf flooring for added tactile stimulation

JOCODEEN  
Play Like Children

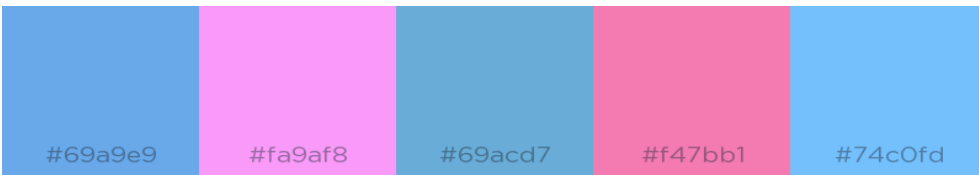
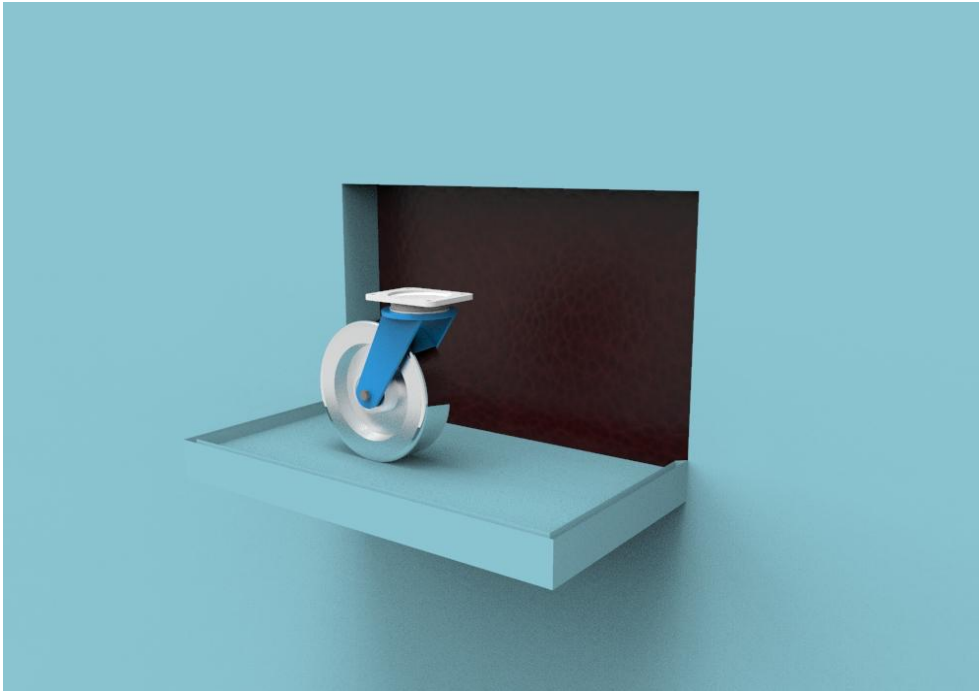
Use of Calming Colours in the  
**Color Palete**

Submitted by; Tina Mehta

#69a9e9 #fa9af8 #69acd7 #f47bb1 #74c0fd



**LEGO wall for tactile simulating play, and table with storage in form of stairs on which the children can work and play on.**



**Mystery window in the playhouse, Treasure hunt drawers with filled with tactile stimuli such as slime and kinetic sand, fur balls etc.**

**Colour pallet is made up of baby blues and baby pink that relatable yet calming colours so as to not to to children suffering from spd are not annoyed at the sight of them .**

### **Methodology:**

**The methodology used in this research paper is secondary research of the qualitative nature, wherein the researcher went through an adequate amount of scholarly material written on the said material, to formulate this literature review.**

**The secondary research is also done by going through various interviews available on the video sharing platform youtube.**

**Other methods include the primary research conducted by the researcher in 2018 at Institute of Human Behaviour and Allied Sciences, Dilshad Garden, Delhi. Though the above mentioned methods of secondary research was quite adequate and effective at collecting information on the said topic for formulating a research paper under the given time frame, more comprehensive primary methods might have been more helpful in further understanding the challenges faced by the disabled communities.**

### **Conclusion**

**People who live with youngsters living with inabilities still face a few difficulties which have stayed unattended for a long time with no legitimate component to check them. These difficulties incorporate absence of general access in the basic structures, poor arrangements of training and wellbeing administrations and furniture pieces. There are numerous battles individuals with noticeable and hidden disabilities experience. This design tries to**

**curb the tactile challenges faced by children suffering from Sensory Processing Disorder.**

**Possible benefits of this design include:**

- *Children suffering from SPD (tactile variant) will have something which actually helps them to cope with their condition in their homes, disguised in the form of a playhouse. So playing will actually help them with their condition.*
- *Other children will indulge more in active play.*
- *All children will have a specific play area dedicated to them.*

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**MONI PATNI**



**ARUJA VERMA**

**With many of my family members being engaged in creative pursuits, I feel that creativity is in my blood and studying Product Design at Amity is helping shape that creative instinct into professional skills wonderfully well.**

**One could almost call me a perfectionist because of my relentless striving for excellence in every project - not only in terms of working out imaginative concepts towards achieving specific goals but also executing them in a simple, clear, concise and timely manner. Apart from my favourite pastime of doodling and sketching, I love watching movies and TV series. My favourite genres are murder mystery, mythological/fantasy and historical themes.**

# **BISTARAM**

## **ABSTRACT**

Taking care of bedridden patient can be difficult, and requires a great deal of patience and understanding. Most of these patients have a hard time adjusting to this lifestyle and may develop significant health problems. As a caregiver, it becomes our responsibility to help the patient adjust – both physically and mentally. The patient may also require help with numerous daily basis tasks. Understanding this problem, we have designed a multi utility Bed for bedridden people. People suffering from some disability or disease and, prescribed for bed rest, they become dependent on others for their daily activities, to make them more independent and self-ample, as per the collected research data through surveys, interviews, and secondary data.

## **KEY WORDS**

*Bed for bed ridden people, inclusive design, independent, self-reliable, multifunctional, differently abled people*

## **INTRODUCTION**

As we wanted that bed ridden people should become more independent and less reliable on others. We focused for the design to be inclusive in nature, so that it could be used by both people with or without disabilities. It contains all basic amenities without occupying extra space than a usual bed would occupy, it is multi-functional inclusive design as is gives storage facilities, mood changing equipment (for controlling anxiety), air purifier, an exercising equipment for leg etc,.Further the bed design has



amenities like a refillable water tank, Storage facility, lighting (for reducing or controlling anxieties), Oxygen cylinder and drip holder (for easy fittings), a music speaker (for reducing the feeling of loneliness and as well as changing mood), Emergency bells. We have given a name to our design bistaram has been derived from two words in Hindi language BISTAR- BED and ARAM- REST. This bed is specially designed for people who are on bed rest and require assistance for their daily activities.

## Literature Review

We have gathered information which tells us about the need of a special bed which caters most of the problems faced by people who are recommended bed rest and its design and features are inclusive in nature.

## FOCUS GROUPS

- ***Pregnancy - for hundreds of thousands of women, bed rest is no fiction: It remains one of the most frequently prescribed treatments for pregnant women at risk of preterm birth. It's estimated that around 20% of women are prescribed with bed rest at the some point of time during their pregnancies. Up to 95% of obstetricians have report that they've prescribed with bed rest. (the atlantic,2018)1.***
  - 5. *estimated to be between 20% and 80%. Bed rest has been advocated to prevent PTC (Effectiveness of bed rest after mild traumatic brain injury,2002)2.*
- ***Back pain is second, only to headache. It can be acute, chronic and is mostly caused by minor injuries, slipped discs, facet joint problems or arthritis. Doctor's advice patients to***

*ensure that they take proper rest before starting working again.*

- ***Mental disorders - Between 1% and 3% of the South African population are likely to suffer from a mental health problem that's severe enough to require hospitalisation. Patients suffering from mental health problems like milder forms of depression can be effectively treated with medication, which will not interfere with productivity. In the case of serious forms of mental disease, it may be impossible for a patient he require to work and also require lengthy periods of absence.***
- ***Heart disease and stroke - Heart disease and stroke are the number one killers in South Africa. One in three men and one in four women will suffer from cardiovascular disease before they reach the age of 60 year. Right now, the total direct and indirect costs related to death and disability are apparently from heart disease. (health24,2017)3.***
- ***When non-fatal, heart attacks and stroke often cause or result in severe disability and consequent need for rest. (health24,2017)3.***

## **PRODUCTS IN MARKET**

- ***The bed is supported by a main frame on the floor and a half - frame is supported by a scissors arm construction of the main frame. The arm frame of the scissors lifts and lowers the frame and consists of a unit connected between an intermediate frame point and the cross - section of the scissor braces. A mattress support unit is supported pivotally for tilting movement between vertical and horizontal positions on the***

***intermediate framework. The unit of the mattress holder is divided into three sections, which are pivotally interconnected and moving. An elevator shape is moved along the base of the mattress support unit for elevation.***

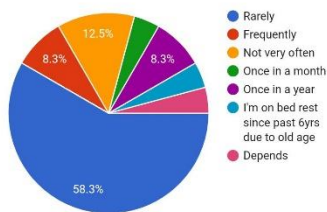
- ***A patient moving device that contains an adjustable post with pins to attach to the head of a bed and a cable wound on it with a winch. (Warren.E, 1969)4.***

## **6. RESEARCH and SURVEY**

**7. PURPOSE OF OUR RESEARCH-** To find out the problems faced by bed-ridden people and to evaluate the average duration of time a person spends on bed, and to find whether a person requires to own a product for this disability.

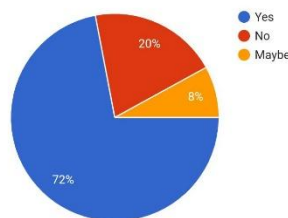
1. How often do you fall sick?

24 responses



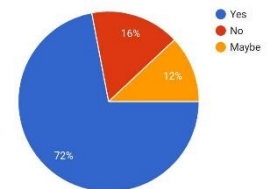
2. Do you know a person who has been prescribed a bed rest by the doctor?

25 responses



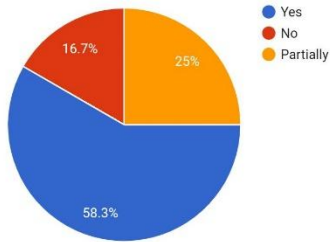
3. Has the doctor ever prescribed you with bed rest?

25 responses



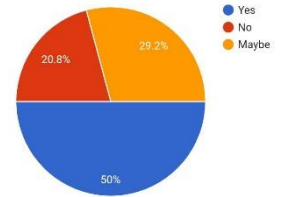
5. We're you dependent on someone for your daily basis activities like drinking, eating, and excretion?

24 responses



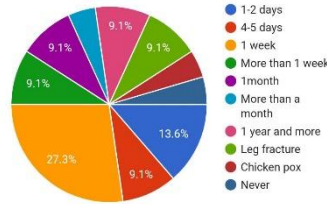
6. Does the person you know was dependent on someone for daily basis activities?

24 responses



4. If YES, for how long were you prescribed for bed rest?

22 responses



7. What are the major problems you think that a bedridden person faces the most according to you?

15 responses

Sleeping problem
My back and back thighs are full of marks on my body due to excess laying on bed
Eating food
Going for bath and frustration
Taking care of them
Going to the wash and frustration
Frustration due the disability for not performing a task
Going for a walk
Frustration,because of lack pf activities and home sickness
No proper lighting and smelly surroundings

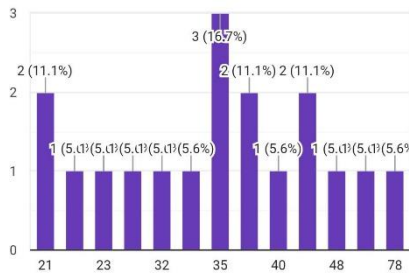
7. What are the major problems you think that a bedridden person faces the most according to you?

15 responses

Toilet problem
Hygiene
nothing
He or she gets dependent on othets
Going to the washroom is a task
Sleeping problem
My back and back thighs are full of marks on my body due to excess laying on bed
Eating food
Going for bath and frustration
Taking care of them
Going to the wash and frustration

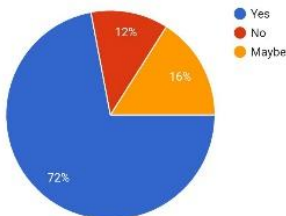
Age

18 responses



8. Would you like to own a product which has all the daily basis requirements at one place and making you less dependent on others?

25 responses



**RESULT-**We evaluated that people see this as a disability and through this research analysis we came across different problems that people face and keeping them in mind we constructed a design to help people in becoming less dependent on others and more depended on themselves.

## **INCLUSIVE DESIGN**

***8. Inclusive design is the design of an environment in which as many people are involved, irrespective of age, gender and incapacitation can access and utilize a product without any arduousness. An inclusive environment is not only paramount for buildings but is additionally paramount for an open area where people have ease in performing about daily activities. The environment is designed for all people, for society as whole. The products, furnishings, shops, offices, hospitals, recreational facilities, parks and streets are included. The diversity and uniqueness of each person is recollected in inclusive design.***

### ***The Principles of Inclusive Design***

- Inclusive – so everyone can utilize it safely, facilely and with dignity***
- Responsive – taking account of what people verbally express and they require.***
- Flexible – so different people can utilize it in different ways***

- ***Convenient – so everyone can utilize it without an inordinate amount of effort or dismemberment***
- ***Accommodating for all people, regardless of their age, gender, mobility, ethnicity or circumstances***
- ***Welcoming – with no incapacitating barriers that might omit some people***
- ***Realistic – offering more than one solution to avail balance everyone’s needs and apperceiving that one solution may not work for all. (inclusive design hub, 2018)5.***

**9. 1.BISTARAM is an inclusive design as it follows all the principles of inclusive design. This bed can be used by people with or without disability. It is a very functionable design which does not hinders/creates barriers that might exclude someone. it is**

- ***inclusive in nature***
- ***its responsive as it comes with all the basic requirements for a person who uses the bed***
- ***the design is flexible as patients can customize the bed as per their requirement.***
- ***It’s very convenient and easy to use.***
- ***The bed can accommodate all- regardless of their age, sex, gender etc.***
- ***It does not create any barriers towards its usage, therefore its welcoming in nature***
- ***As it’s a multi-functional bed, i.e., provides more than one solution and aid so, it’s realistic as well.s***

## **BISTARAM**

**It is multifunction bed which is specially designed for people who are prescribed bed rest or cannot walk/stand; they consequently become dependent on others for their daily activities. This bed has been created to make them less dependent and more self reliable. This bed comes with a lot of different functions which will ease the patient's dependability on others.**

### **PROPOSED FUNCTIONS-**

- 1. CABINET** - it contains two main cabinets on either side of the bed, the one on the right-hand side is a chamber for keeping all the medicines. It works on a push mechanism, i.e. when u push the cabinet down it will elevate and the person can keep their medicine and small belongings in it. The cabinets are also voice controlled for the people who have lost their upper limbs. With the help of mic fitted inside cabinets, the person just has to call out cabinets name which can be ABC or 123, the cabinet will rise up, ready for use.

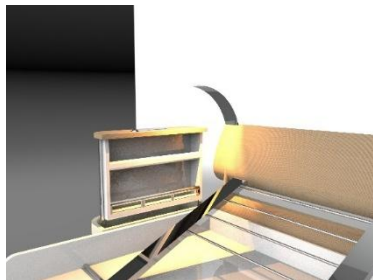


Figure 1 right hand side cabinet for medicine (open)

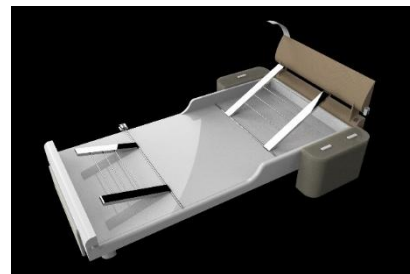


Figure 2 right hand side cabinet (closed)

**2. CABINET** - left hand side cabinet contains two sub compartments. One of them is a refillable water dispenser which can contain up to 2.5 litres of water, its really easy to use- to dispense water from it the person just has to push the button in order to fill up the glass. By removing the back lid, the person can refill the container. The other part of this cabinet is a small storage compartment, to store small objects like – torch, tissue box, religious idol for praying, headphones, cell phone etc. these compartments are easily accessible. They are very easy to use and to clean.



Figure 3 left hand side chambers (open)



Figure 4 left hand side chambers (water inlet)

**ELEVATING INCLINED FRAME-** the bed contains two elevating inclined frames, which is used to elevate the patient at a certain comfortable angle, it can be operated by rotating a wheel present at the right side of the bed. Inclined frame for legs has also been provided so as to put the legs at a certain angle, to increase the blood flow in legs. Inclined frame for legs is operated through similar wheel present the bottom right side of the bed, to elevate the legs assistance would be required to rotate the wheel.





3.

Figure 5 elevating inclined frames both upper body and lower body (open)



Figure 6 elevating inclined frames both upper and lower body (closed)

- 4. STORAGE DRAWER-** the bed contains one extra bed storage area which can be used to put objects which require more space for example – adult diapers, bed sheets, pillow covers, quilts, extra oxygen cylinder, etc. the drawer works on simple mechanism of push and pull and is easily accessible.

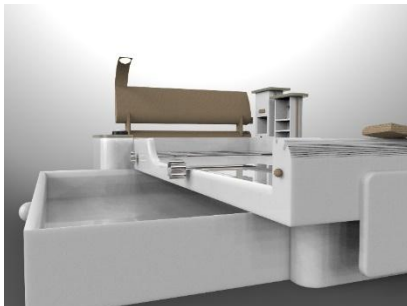


Figure 7 storage drawer (open)



Figure 8 storage drawer (closed)

- 5. OVERBED FOOD TRAY-** bistaram comes with a detachable food tray. It is attached at the front, it is easily reachable, to use the tray the assistant (helper) needs to unhook the tray from the front, unfold its legs and put it over the patient's lap. Its an inbuilt feature that comes with the bed. Overbed food tray is easy to use and to clean as the Food tray is built with a

simple mechanism of unfolding the legs to use the tray and the material which covers the front of the tray is made up of synthetic (artificial) wood- mica which is very easy to clean, it can be wiped with a dampened cloth.

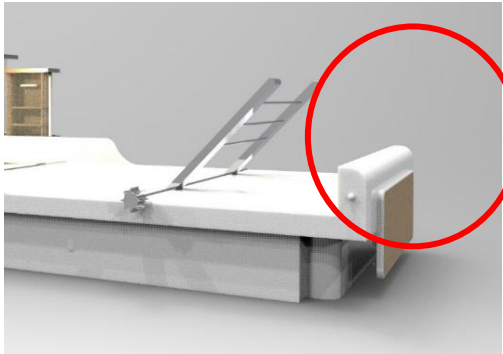


Figure 9 red circle focusing on the position of the over bed food tray



Figure 10 front view of the over bed food tray

**6. READING LIGHT – on the top right corner there is a reading light, the light is also sound controlled for the people who have lost their upper limbs. light is controlled by the remote controller, the light comes with two modes**

- **Reading light: to read books at night/night lamp.**
- **Therapy lights: If you live in an area that doesn't get a lot of natural sunlight, a therapy light might help boost your mood and keep you calm. Therapy lights can be effective for treating seasonal affective disorder (SAD), and may bring the brighter outlook you're after. (health line, 2005)6.**

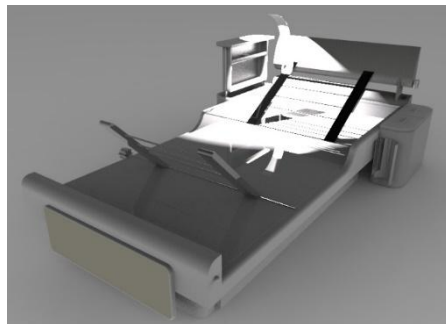


Figure 11 reading light/ night lamp

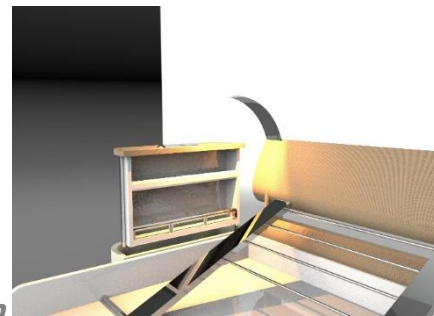


Figure 12 soft therapy lighting

**7. SPEAKER AND EMERGENCY BELL-** Research results suggest that slow or soothing music can induce a relaxing effect and facilitate reduction in anxiety levels. These physiological changes associated with slow and soothing music, such as meditative music may induce a state of relaxation and further decrease anxiety levels. (Meditative music listening to reduce state anxiety, 2017)7.

**10.**Speaker has been placed just below the back rest, and there are two speakers for surround sound. They are controlled by a remote control.

**11.**Emergency bell has been provided for emergency situations when the patient needs external assistance, its placed at an easily reachable position. This bell comes with a bell receptor which can be placed in some other room/area, its battery operated.

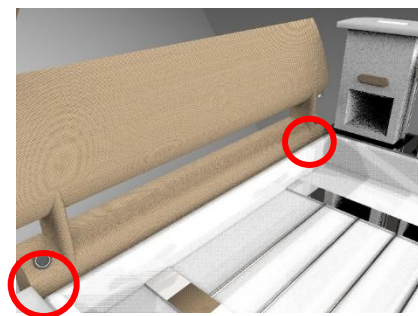


Figure 13 red circles emphasising the position of surround sound speakers

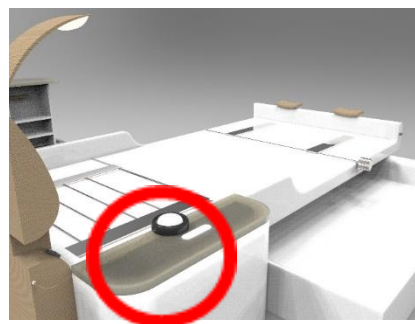


Figure 14 emergency bell

**8. OXYGEN CYLINDER, DRIP HOLDER AND CATHETER POUCH HOLDER** - oxygen cylinder holder has been placed towards the left side of the bed, it's a flexible oxygen tank holder which can hold up to 10.2 litres cylinder.

**12. The drip holder is placed on the left-hand side of the back rest, drip holder is also flexible, as it can be tightened as per use.**

**13. Catheter pouch holder has been placed near the corner of left foot. It's a simple knob which can hold any pouch it may be a catheter pouch or a garbage bag.**

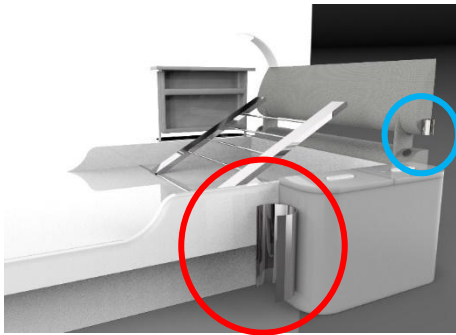


Figure 15 red circle – oxygen tank holder, blue circle- drip holder



Figure 16 red circle showing catheter pouch holder/ garbage bag holder

**LEG MOVEMENT EQUIPMENT-** it's a detachable foot holder which is placed over the rounded edge of the bed, it is used by the patient to increase the blood flow in the legs. As the patient is in the same position for hours, its recommended by the doctor to move the feet in clockwise, anti-clockwise and in n out directions. By attaching these padded paddles on the outer edge, the patient can place their feet on the equipment and do some basic exercise. As they are detachable, they do not create any hinderance in other functions of the bed. To attach the equipment the assistant needs to match the male and female grooves to make it work

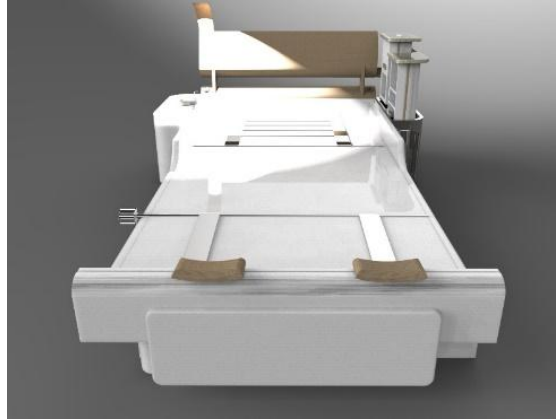


Figure 17 leg movement exercise equipment

## CONCLUSION

Due to heart stroke, mental health, lower back pain, pregnancy, and other related problems, people are advised or asked to have a proper bed rest, so as to provide all the essential things at a single place, within the patient's reach was our basic theme and making the user less reliable on external assistance and become independent to an extent. we have created this single piece of furniture to help the person who feels helpless and dependent on others, here we have considered every minimal detail of what may and may not affect a patient's health, the furniture is made baby safe as well because all the edges and corners are filleted and rounded so that no one gets hurt with the sharp edges of the furniture. Most of the functions are placed within the patients reach, no doubt some of the functions will require external help for which we have provided an emergency bell as well. Material chosen to make the bed is high grade thermoset plastic, it can also be made with other different materials like wood and metal, but primarily we have created this with high grade plastic

**as, plastic is lighter in weight and easy to clean and is water repellent.**

## **DESIGN IMPLICATIONS**

**Due to lower back pain, pregnancy, and other related problems (as mentioned above in literature review) people are advised or asked to have a proper bed rest. Through the reference of a research papers, articles and global stats we have come to know that worldwide over 540 million of world's population is confined to this issue of long-term bed rest. This bed can be used in hospitals, nursing homes, old age homes even in patient's own house.**

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***Hi I'm Kanika a Product Design Student in Amity School of Design of Amity University, Noida. Studying Product Design at Amity shapes creativity into professional skills. Design is more than creating an object. It is the journey that Requires different abilities along the way. I'm curios to learn new techniques and skills in handcrafted and smart product sector. I possess creativity and innovative attributes by breaking boundaries and orking efficiently to meet tight deadlines. Keeping in mind the functionality and ease to use the product, I'm captivated to design and built new things to cater the needs.***

***My project co-ordinator is Dr Dipanka Boruah.***



# **DESIGN RESEARCH METHODOLOGY**

## **Hemiparesis Crockery**

*Kanika B.des (PD)*

### **Abstract**

**There is no doubt that disability affects the patient completely both physically and psychologically. Even the thought of having any disability disturbs a person so it is very obvious to understand how one feels who is actually disabled and suffering. The brain controls everything and any damage to the brain can result in a lot of disabilities. Stiffness in fingers, shaking hands, lost motor skills is caused due to damage to the brain and thus called hemiparesis. Even picking a pen becomes difficult for a hemiparesis patient. Brain tumor, diabetes, spine injury, traumatic injuries, strokes, swelling or contraction in blood vessels, migraine syndrome, lack of oxygen to the brain and etc. these are some of the causes of hemiplegia. When your right-side of the brain gets damaged, left-side of the body gets affected and when left-side of the brain gets damaged, right-side of the body gets affected. After the effects of this problem lead to dependency on someone else for anything and everything a patient do. Patients are dependent on others for everyday activities. Every patient should be provided with proper treatment and a comfortable environment. Physical, psychological along with pharmaceutical treatment should be given to the patient.**

**If some changes and alteration in our present environment can help patients recover and can live normally like before diseased than those changes must be considered. Environment, where everyone can access public places easily whether he is disabled or not, a place**

where products and services are made considering everyone and a more comfortable and better place to live for disabled is a necessity.

## **Keywords**

*Disability, physical, psychological, hemiparesis, weakness, accessible, limb.*

## **Introduction**

Consider performing an everyday activity such as picking up a coffee cup from a table. Apparently as easy as it may appear, many processes are involved in the performance of such an action. First, the cup needs to be identified visually, for example, its shape, orientation and the 'Cup-related' frame of reference need to be transformed into a 'body-related' frame of reference. Then, the movement towards the cup can be planned in this 'body-related' frame of reference. An appropriate grip must be selected according to the orientation of the cup and intended action. For example, grasping the cup to drink from it requires a different grip than grasping to put it into the dishwasher. Suppose the cup is placed upside down and needs to be rotated. In this case, an initial grip is likely to be chosen that will leave the arm and hand in a comfortable posture upon its placement in a dishwasher. In this particular case, a comfortable posture is attained when the thumb faces upwards and the medial part of the hand faces downwards when the cup is placed in the dishwasher. Such a posture allows efficient handling of the cup since the joints of the forearm are at or near the mid-range of motion. Once a grip is planned, the movement towards the cup can be executed. Such a movement typically involves the coordination of different segments of the body such as the trunk,

shoulder, elbow, and wrist. Moreover, in order to securely pick up the cup, appropriate grip and load forces need to be generated. Similar to the type of grip, proper planning of these forces is necessary to efficiently carry out the task; i.e., a smooth lift of the cup.

This simplified and certainly not complete, task analysis illustrates several of the processes involved in a simple everyday activity and highlights the complex nature of such an activity. Obviously, deficiencies in one or more of the underlying processes may hamper the proper performance of activities. For example, consider having cold fingers in the winter that lead to a decreased sensation of the fingertips. In this case, the generation of grip and load forces may not proceed smoothly, and the cup may even be dropped. Similarly, consider having played an intense tennis match. The day after the match the arm muscles may be stiff and full stretching of the arm may not be possible. In such instances, a person may adaptively use his/her trunk to achieve the movement goal (i.e., grasping the cup). However, joining evidence from recent research indicate that problems with motor skills may be just as limiting for the performance of activities of daily living.

## **Literature Review**

Our brains are very complex. It controls everything we do - our movement, consciousness, thoughts, and emotions. The brain is made up of two halves, the left and right hemispheres, separated by a bundle of fibers called the corpus callosum. The right hemisphere directs the left side of our body; the left hemisphere directs the right side of our body. Generally, the right side of the brain controls muscles and other functions on the left side of the body, while the

**left side of the brain controls much of the right side of the body. If something goes wrong in our brain, if our brain does not develop properly before we are born or if we have an accident or head injury, this can affect the system of our brain. Sometimes this effect is permanent; sometimes it can affect us for a duration of time.**

**The word "Hemi" means "one side" and "paresis" means "weakness." About 80 percent of people who had a stroke have some level and degree of trouble moving one side or face from weakness on one side of their bodies. Hemi-paresis - pronounced hem I parésis´**

**Hemi-paresis is the partial weakness on one side of the body. Hemi-paresis can affect either the left or right side of the body. The weakness may comprise the arms, hands, legs, face or a combination. People who have Hemi-paresis are still able to move the affected side of the body, but with limited strength. One side of the body may become entirely weak, and this condition this is called Hemiplegia. Hemi-paresis sometimes called Hemiplegia but Hemiplegia is a condition that causes half of the body to be paralyzed (or unable to move). While Hemi-paresis is a form of cerebral palsy. It's caused by damage to one half of the brain; specifically, when that damage affects the parts of the brain responsible for motor movements. Half of the body affected depends on which half of the brain has been damaged. Thus, Hemiplegia and Hemi-paresis almost always brain. Hemi-paresis and Hemiplegia are part of the same range of central nervous system injuries. Both interfere with movement and sensation. Both can be difficult to treat, and often severely constrain normal functioning. Though the symptoms are different, the two conditions are essentially different**

**versions of the same underlying problem. Mild to moderate nerve or brain damage will produce Hemi-paresis, while moderate to severe nerve or brain damage will result in Hemiplegia. Also, the same injury can show both symptoms at different times. This is especially true when nerves are packed down or the spinal cord is swollen since changes in swelling or compression can also cause changes in symptoms. Particularly early in an injury's course, it's impossible to determine whether a patient will be left with Hemi-paresis or Hemiplegia.**

**For the treatment of Hemi-paresis, it is very important to know and understand how the patient acquired it and which type of Hemi-paresis he is suffering from. It can be developed in two forms; Congenital Hemi-paresis is present from birth or happens shortly after. Acquired Hemi-paresis results from brain damage that occurs later in life, either due to illness or injury. The way the brain is set up, damage to the left hemisphere usually results in right Hemi-paresis, and damage to the right hemisphere results in left Hemi-paresis. We talk about left or right Hemiplegia, depending on the side affected. Pure Motor Hemi-paresis is the most common type. People with pure motor Hemi-paresis have face, arm and leg weakness. It can affect these body parts similarly, but in some cases, it may affect one body part more than the other. Ataxic Hemi-paresis Syndrome is the second most frequent condition, consisting of weakness or clumsiness on one side of the body. The arm is mostly the more affected part. Symptoms often occur over hours or days. A patient should know which type of Hemi-paresis he or she has because it will help in treatment and will ensure fast recovery. About one in every 1,000 children has Hemi-paresis. In the most of the cases, the damage to the brain happens before, during or soon**

after birth. Some children, however, develop Hemi-paresis after a stroke, an accident, brain infection or tumor. Some people develop Hemi-paresis in adulthood, but there are various reasons that cause Hemi-paresis.

The most common cause is stroke. Strokes restrict with blood flow to the brain. If a region of the brain that affects movement or perception is affected, Hemi-paresis or Hemiplegia may develop. The affected area is usually the opposite of the side of the brain affected, so an injury to the right side of the brain will affect the left side of the body.

Some other causes of Hemi-paresis include;

- *Traumatic injuries affect the brain, spine or nerves*
- *Congenital medical conditions such as cerebral palsy that are present from birth may cause weakness of one side of the body*
- *Spine disease*
- *Brain tumor or spine tumor*
- *Infection in the brain, spine or meninges*
- *Psychological conditions can cause temporary weakness*
- *Temporary weakness after a seizure*
- *Brain bugs such as meningitis or encephalitis*
- *Brain cancer or wounds Disturbing brain injuries to one side of the brain only. Maybe caused by car accidents, falls, acts of violence, and other factors.*
- *Reactions to surgery, medication, or anesthesia.*
- *Lack of oxygen to the brain due to choking or anaphylactic shock.*

- *Scratches in the brain, even if non-cancerous, since these scratches can obstruct function on one side of the brain.*
- *Diabetes*
- *Migraine syndrome, regular headaches of severe intensity occasionally with sensations of numbness and tingling in one half of the body.*
- *Swelling of the blood vessels*
- *Conditions giving from birth can cause a lack of blood supply damages nerve cells in the brain. Birth trauma, difficult labor, perinatal strokes in infants within 3 days of birth can all cause hemiparesis.*

**Specific learning difficulties such as dyslexia, perceptual and concentration problems are common, as are emotional and behavioral problems. Hemiparesis can also cause medical problems such as visual impairment, speech difficulties, and epilepsy. Hemiparesis affects everyone differently but its most obvious result is a varying degree of weakness and lack of control in one side of the body (like someone who has had a stroke). Some are only mildly affected, others more seriously. In some, the leg is more seriously affected than the arm, in others, it is the arm which is more seriously affected. The damage to their brain affects less than their limbs and movement in the majority of cases.**

**People with Hemi-paresis face problem in moving their arms and legs, difficulty in walking and may also experience a loss of balance. As a result, doing simple activities can be difficult. These are grabbing objects, dressing, eating and problems using the bathroom. The loss of abilities that along with a stroke depends on the area of the brain that has been damaged from the stroke. Right-sided Hemi-**

**paresis is responsible for injury to the left side of the brain, which controls language and speaking. People with this type of Hemi-paresis may also have problems talking and/or understanding what people say. They also may have trouble defining left from right. Left-sided Hemi-paresis is responsible for injury to the right side of the brain, which controls how we learn non-verbal communication and certain types of behavior. Damage to this side of the brain can also cause people to talk disproportionately, have memory problems and short attention spans. Damage to the lower part of the brain can affect the body's ability to direct movement. This can lead to problems with posture, walking, and balance. People with Hemiparesis may have intermittent pain and may be better able to control their limbs at some times than at others.**

**Hemi-paresis is a permanent condition, so it will not go away and it cannot be cured. But it is also non-progressive, which means it will not get any worse, and with proper treatment, its effects may be reduced. When someone is diagnosed with Hemi-paresis, they are usually referred to a child development center, often within a local hospital. Here, different therapists work with the patient to lessen the effects of the condition, strengthen the weakened side of the body and develop the skills of the individual.**

**Treatment of Hemi-paresis is first focused on the treatment of the cause, whether it is a stroke, a brain tumor or an infection, etc. The long-term treatment goal of Hemi-paresis is to build strengthened motor skills, coordination and to improve your ability to manage everyday activities. Physical and occupational therapy plays an important and major role in the recovery of Hemi-paresis. Therapy includes the use of electrical stimulation to the brain,**



imagery, the use of assistive devices such as a cane, walker or wheelchair. Coincidentally, Hemi-paresis is not a progressive condition unless there is evidence of an aggressive, growing brain tumor.

Some changes to the home may need to be made to accommodate and help increase mobility. Some of the modifications may include:

- *Grip bars*
- *Inclines*
- *Raised up toilet seats*
- *Non-slip adhesive tiles in the bathtub*
- *Electronic toothbrushes*
- *Electronic razors*

Rehabilitation can help Hemi-paresis patients learn new ways of using and moving their weak arms and legs. It is also possible with immediate therapy that people who suffer from Hemi-paresis may eventually regain movement. Some of the professionals involved in Hemi-paresis rehabilitation include

● **Physiatrists** – Doctors who specialize in rehabilitation. A stroke patient needs specialized care from a professional. A physiologist is ideally the one who will manage a stroke patient's entire rehabilitative process.

● **Physical therapists** – specialized in treating disabilities related to large movement. They can support with strength, endurance, and range of motion problems. They can also help stroke survivors get back used of weak arms and legs through coordination and balance skills exercises.

**. • Occupational therapists – They help survivors relearn the skills needed to perform everyday activities and fine motor skills, such as holding a pen. They also help survivors learn how to change their environment to meet their new needs. Some capable new treatments for Hemi-paresis may also help stroke survivors improve movement in the stroke-affected arms and legs years after the initial stroke, and include:**

**• Electrical stimulation has been used in the treatment of Hemi-paresis to strengthen the arm and improve its range of motion. This process consists of placing small electrical pads on the weakened muscles of the arm. An electrical charge helps the muscles contract as the patient tries to make it move.**

**Not just hemiparesis patients but every patient should be treated uncomplainingly and properly. The patients should get an environment that is easily accessible and comfortable for everybody.**

**For a minute just imagine if one of your hand is weak and not have the power to do day to day activities. You have to be dependent on others for everything from holding a glass of water for you to wearing clothes. Or if your leg is paralyzed, you need someone to access and reach public spaces. You are dependent on others for everything, this feeling will even disturb you and let to think about it for a while. If just this feeling or maybe thought of physically disabled can put you in thought, think about those who suffer from such situations. Disabled people face a lot number of challenges in their life from everyday activities and actions to public and professional environments. From family members to friends and from colleagues to service providers everyone needs to understand**

**the importance and need to create an environment that treats everyone equally and facilitates everyone despite of diseases disabilities. To create such an environment, we need services and products that are accessible by and to everyone.**

## **Methodology**

**This research attempts to gain understanding and awareness about the problem that is associated with many other problems and 1 in every 100 people suffers from it. Hemiparesis and need for an accessible and comfortable environment are discussed in this research. Using primary research, a number of doctors were interviewed. The interview consists of several background questions to understand what hemiparesis is. This interview also attempts to see how this problem affects the patient physically, mentally and the lifestyle of the patient. Hemiparesis patients were interviewed to see what they face in their daily life and how they manage to perform everyday activities. Using secondary research, a couple of books on hemiplegia and survivors of hemiplegia were taken under concentration. This research provides knowledge about the less known but most caused problem.**

## **Process**

**Through interviews, it was understood that what hemiparesis patients need in their everyday activities. Some alteration and new designs in the environment can help hemiparesis patients access and do their task independently. I choose the most necessary and basic activity; consuming food is an essential part of everyone's life. To independently have food, I designed a crockery set that provides**

an extra place for grip and let patients hold a spoon, plate, glass without anyone. This will be led to confidence and they will not feel left out and dependent on others. This will also help in better and fast recovery because psychological state plays an important role in recovery.

## Crockery Design

### Plates

3 different plates in different size each.



Top view

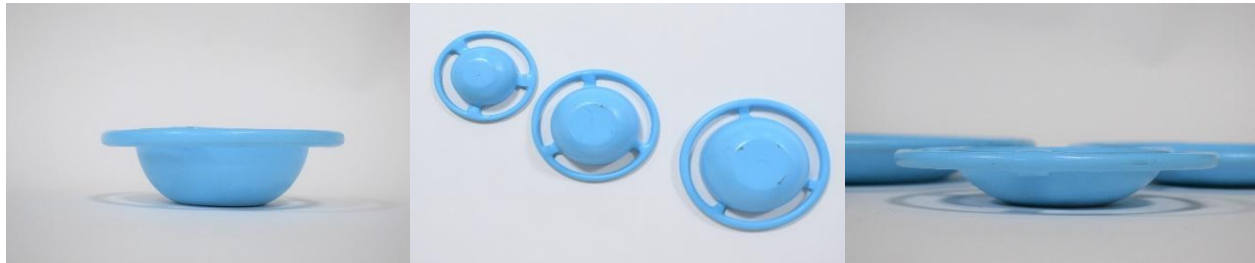
Side view

Bottom view



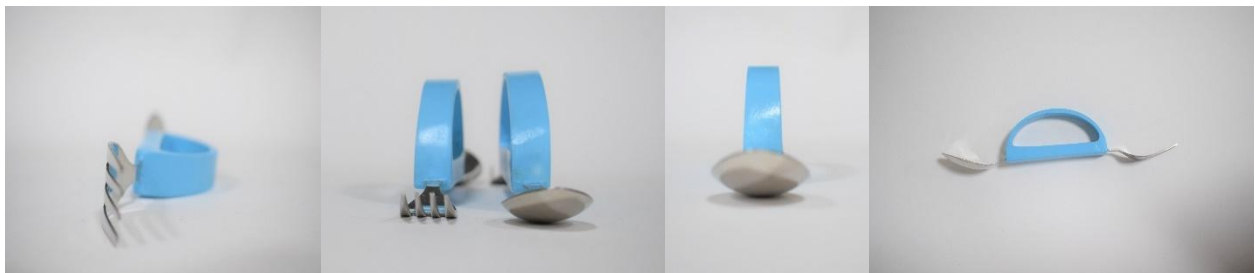
Bowls

**3 different bowls in different size each.**



**Spoon and Fork**

**Both spoon and fork are attached to each other to form one product.**



**Fork**

**Different sizes**

**Spoon**

**2 in 1 both fork and**

**spoon**



**Glasses**

**Side view**

**Bottom view**

**Top view**

## **Conclusion**

**One of the most essential parts of the body is upper limbs. Upper limbs allow us to perform our task, with the help of our hands we can almost everything we think of and mostly every activity includes**



**involvement of our hands. Any stiffness, weakness, shaking arms can become an obstacle in performing an action. People with a problem in their upper limb face many challenges in their daily life and prevent them from doing what they want to do. They are dependent on others to perform a task so why not design an environment for them where they can do their work independently. Consuming work is very basic and a necessary for everyone and crockery set for the same is a good start for hemiparesis patients to**

**get back to their normal working life. A crockery set that has some extra space for grip that patient needs is something that will allow them to eat and drink independently along with the movement of their hands which will contribute to physiological and psychological treatment. Accessibility to the normal world will eventually lead to the better and fast recovery of the patient.**

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

### **By Sunil Bhatia PhD**

**I am happy to cover the recently concluded conference on design of Amity University and requested the Dr. Ekta Singh to be Guest Editor of this special issue. She accepted and in very short time she submitted the publishing material. I am thankful to her and her students who have shown complete dedication for this special issue.**

**Students and teacher has unique relation where student is raw and trust the teacher without hesitation and with positivity learnt the subject. I feel any negativity in mind of student stop him from learning. Reason is student believe in his model and whatever other models are designed for him he rejects because of his fix parameters that do not allow to accept the new things. First job of teacher is to make him sure that what I am telling is based on general idea and who so ever fits into can learn without difficulty. Your model may be better but I have to handle the teaching of class not individual like you. We can discuss your model in spare time and I will give you opportunity to explain why you feel your model is better than rest. That smashing of the model is for current purpose and not for ever.**

**Learning faces many obstacles and sometime students are comfortable with calculation and some with theory. We design the course in such a way that it should have right blend of theory and practical. This exercise gives the confidence of thinking in organized manner. As a jury member I prefer to vote in favor of that that is already executed rather it is still in theory process. Reason execution faces various obstacles and overcoming is real job.**

**LAMBERT Academic Publishing has published book "Design For All, Drivers of Design" author Dr. Sunil Bhatia of Design For All Institute of India and it is available on [www.morebooks.de](http://www.morebooks.de) one of the largest online bookstores. Here's the link to it:**

**<https://www.morebooks.de/store/gb/book/design-for-all/isbn/978-613-9-83306-1>**

**This book is dedicated to our esteem readers, contributors and well wishers.**

***With Regards***

***Dr. Sunil Bhatia***

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## Forthcoming Issues

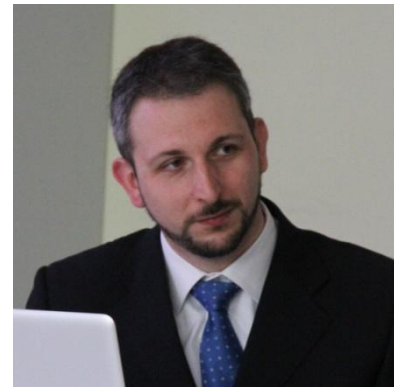
### May 2018 Vol-14 No-5

**Emilio Rossi is CEO of Emilio Rossi Design Consulting (Italy) and Adjunct Professor of Industrial Design in the Department of Architecture at the University of Chieti-Pescara (Italy).**

**He got a PhD Industrial Design (Architecture and Urban Planning Programme) and a**

**Master in Architecture at University of Chieti-Pescara (Italy); he also completed a Master in Euro-Project Management at Europa Cube Innovation Business School (Italy). In 2013, he was a Visiting Research Scholar at Brunel University London (UK), where he conducted studies on Inclusive Design, HCI Design and Design Research.**

**His research interests revolves around four areas: 1) Inclusive Design in new product development; 2) Human-Computer Interaction and new forms of natural gestures for digital and tangible products, with a focus on the development of new technologies, tools and methods for sharing knowledge and know-**



how (i.e. tacit knowledge); 3) Ergonomic Design for Sustainability and, recently, 4) 3D Printing and Additive Manufacturing.

He serves as Scientific Advisory Board Member for AHFE (Applied Human Factors and Ergonomics), where is Co-Chair of the International Conference on Additive Manufacturing, Modeling Systems and 3D Prototyping, for IEA (International Ergonomics Association) in the Technical Committee on Human Factors and Sustainable Development and, till 2014, in the National Board of SIE (Italian Society of Ergonomics and Human Factors).

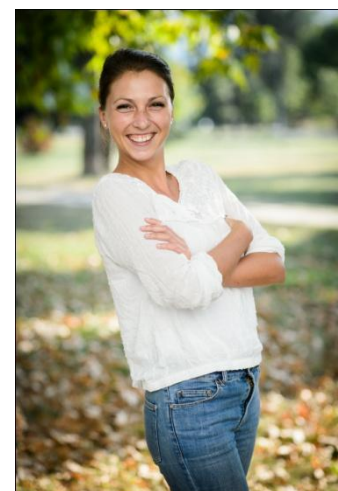
His works has been published in more than thirty peer-reviewed publications, including: The Bloomsbury Encyclopaedia of Design (six items), Proceeding of AHFE, Proceedings of IEA, Proceedings of NES (Nordic Ergonomics and Human Factors Society) and Proceedings of SIE.

Professionally, he has 10+ years' experience in new product development; currently he works as a Designer and Consultant in R&D and Innovation. His works have been awarded and produced by many companies, both in Italy and abroad. Specifically, his products and researches have been realised in Italy, UK, Germany, China, Taiwan, Nicaragua, USA, Canada and Chile.

## **June 2019 Vol-14 No-6**

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developer and visioner.

Ivelina is the founder of Design for all Bulgaria Foundation, which is part of Design for all Europe. She is also the co-founder of Service Design Network chapter Bulgaria, member of Global Service Design Network. She is currently Research Associate at the Helen Centre of Design at the Royal College of Art in London. Ivelina has a vast experience in delivering training for professionals, business and non-government organisation on how to use design for social good and life improvement. Her projects include research in access to health information, creating a space for social innovation, conducting research for the first tourist wayfinding system in Sofia, Bulgaria, consulting inclusive playground, consulting technology Startup Company developing robotic devices for people with paraplegia and many more.

## July 2019 Vol-14 No-7

***GONZALO RAINERI BERNAIN***

***Assistant Professor | Design School***

***Universidad Finis Terrae | Chile***

***PhD (c) in Design***

***Universidad de Palermo | Argentina***

**More than 30 years of experience in all fields**

**of visual communication design and 24 years of experience in the field of interactive design. Permanent formal education and continuous research in the fields of design, interactivity, experience design, new media architecture, market trends, new technologies, bioclimatic architecture and environmental issues among others. Advisor and consultant in strategic and communicational aspects for middle and large companies and organizations. Proactive entrepreneur in new trend media, creating the first Film Animation Festival, first cyber café, first 100% visual magazine**



and first ECO friendly shop in Chile. Worked for companies and organizations in Amsterdam, Dublin, Madrid and Santiago. Graduate & postgraduate professor and lecturer in design related matters. Actual Product and Spatial Design Studios Coordinator, Member of the Research in Design Committee at Universidad Finis Terrae, Design School. O yeah! Did I say I'm doing a PhD in Design in Buenos Aires at the same time?

## **August 2019 Vol-14 No-8**

**Mugendi K. M'Rithaa ,Transdisciplinary Industrial Designer/Educator/Researcher with a passion for Afrika, Design and Innovation.**



**A widely traveled transdisciplinary designer experienced in design education and research. Skilled in various socially conscious fields including: Industrial Design, Human Factors Engineering/Ergonomics, Advertising and Marketing, Building Research, Design Research, Universal Design, Design Thinking, Communication Design, as well as Design Strategy and management**

# New Books



ISBN 978-613-9-83306-1



Sunil Bhatia

## Design for All

Drivers of Design

Expression of gratitude to unknown, unsung, unacknowledged, unappreciated and selfless millions of heroes who have contributed immensely in making our society worth living. Their design of comb, kite, fireworks, glass, mirror even thread concept have revolutionized the thought process of human minds and prepared blueprint of future. Modern people may take for granted but its beyond imagination the hardships and how these innovative ideas could strike their minds. Discovery of fire was possible because of its presence in nature but management of fire through man made designs was a significant attempt of thinking beyond survival and no

doubt this contributed in establishing our supremacy over other living beings. Somewhere in journey of progress we lost the legacy of ancestors in shaping minds of future generations and completely ignored their philosophy and established a society that was beyond their imagination. I picked up such drivers that have contributed in our progress and continue guiding but we failed to recognize its role and functions. Even tears, confusion in designing products was marvelous attempt and design of ladder and many more helped in sustainable, inclusive growth.

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**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

**Harvard  
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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 *EN SURE TO DIGITAL ACCESSIBILITY THROUGH PROCESSES AND POLICY*

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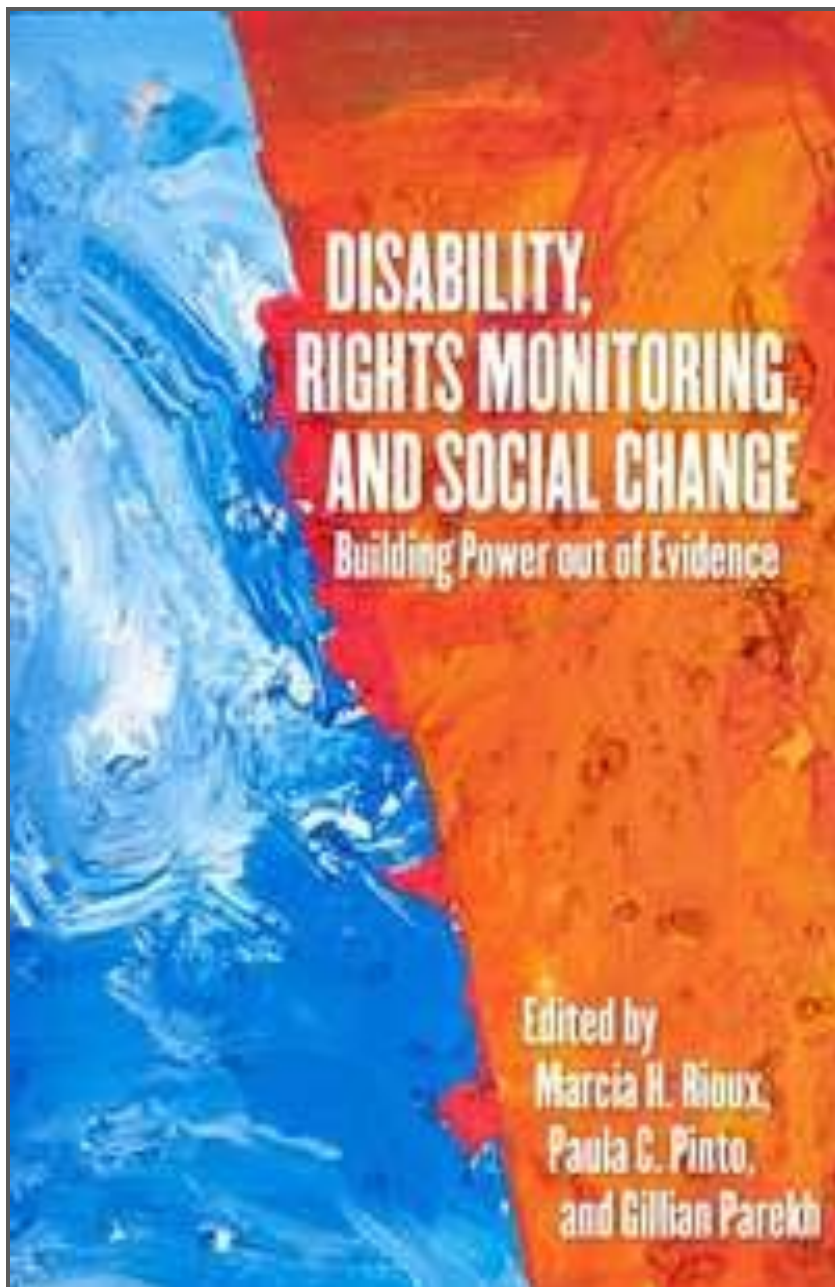
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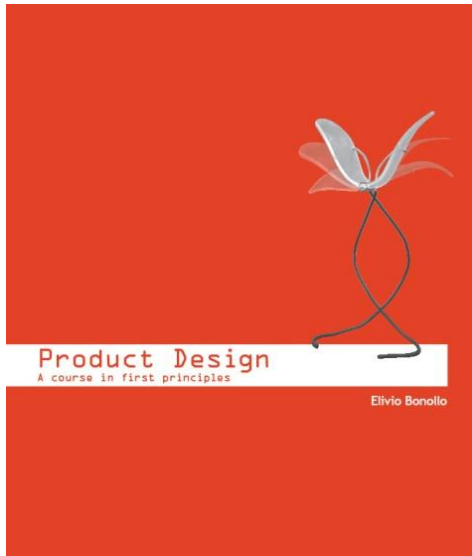
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Disability, Rights Monitoring and Social Change:



## New Update: ELIVIO BONOLLO (2015/16) PRODUCT DESIGN: A COURSE IN FIRST PRINCIPLES



Available as a paperback (320 pages), in black and white and full colour versions (book reviewed in Design and Technology Education: An International Journal 17.3, and on amazon.com). The 2018, eBook edition is available in mobi (Kindle) and ePub (iBook) file versions on the amazon and other worldwide networks; including on the following websites:

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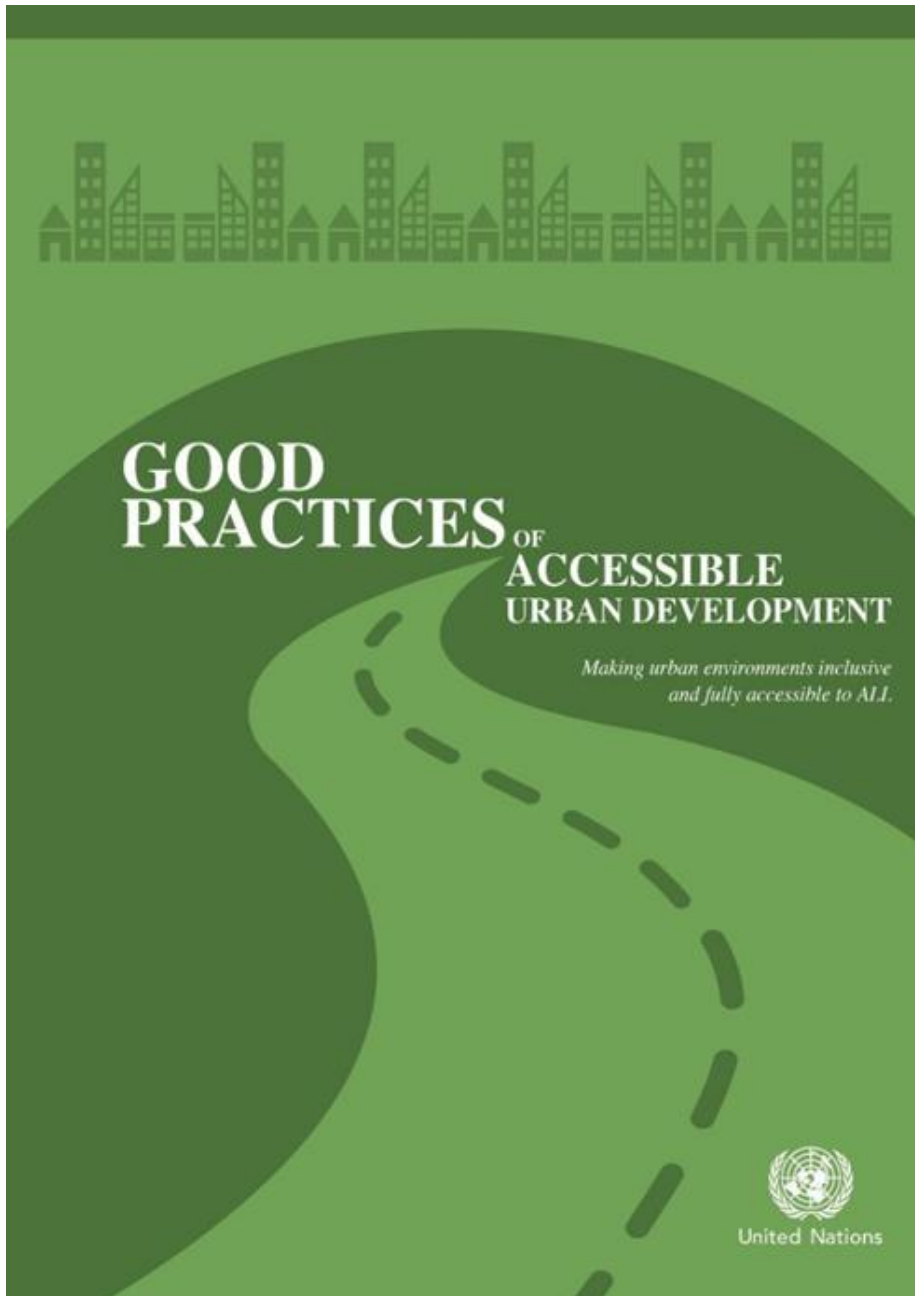
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# TAPPING INTO HIDDEN HUMAN CAPITAL

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

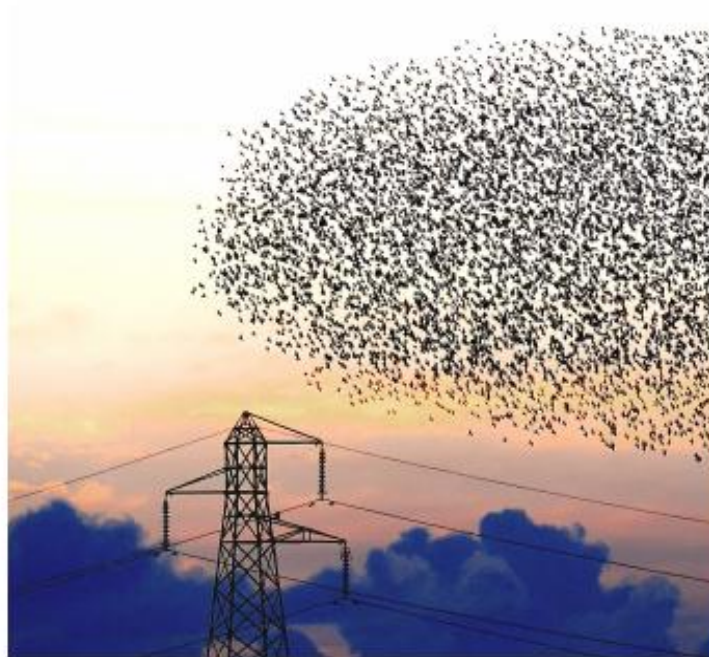
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# FROM MODULARITY TO EMERGENCE

A PRIMER ON THE DESIGN AND SCIENCE OF COMPLEX SYSTEMS

Chih-Chun Chen and Nathan Crilly



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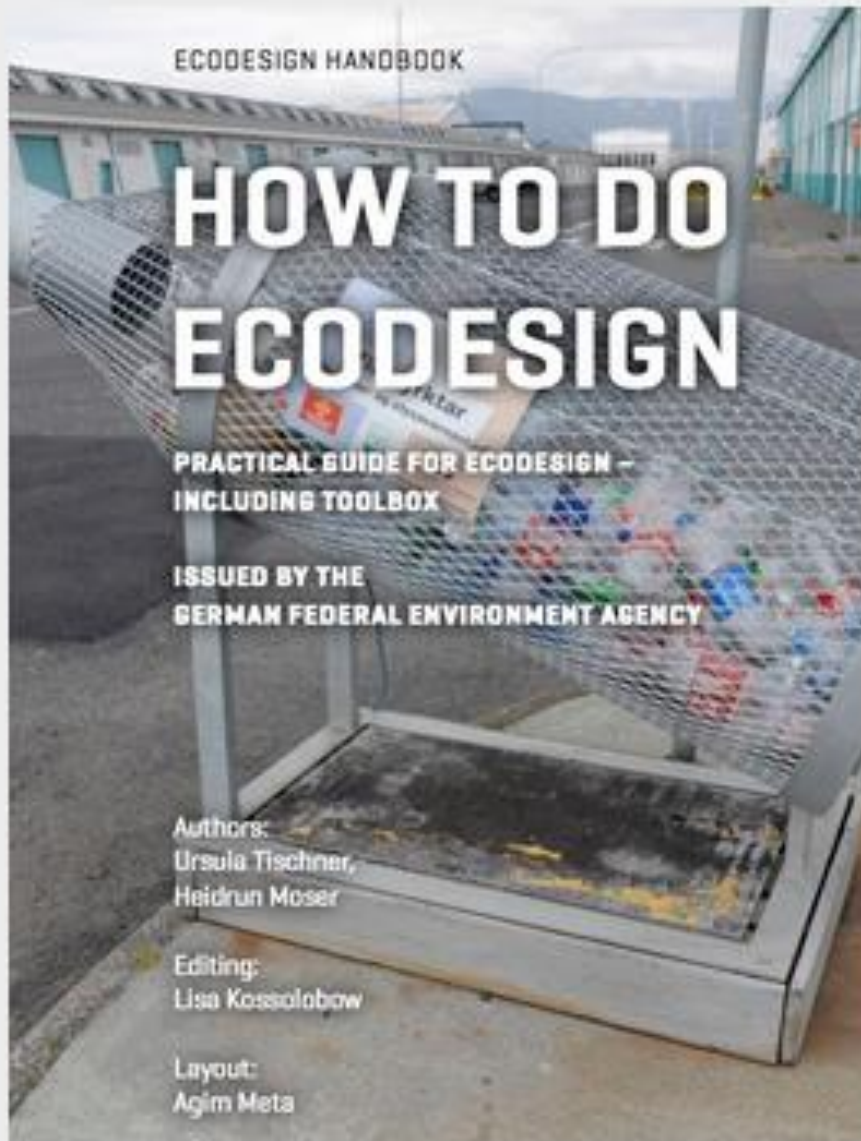
Dr Chih-Chun Chen and Dr Nathan Crilly of the Cambridge University Engineering Design Centre Design Practice Group have released a free, downloadable book, *\_A Primer on the Design and Science of Complex Systems\_*. This project is funded by the UK Engineering and Physical Sciences Research Council (EP/K008196/1). The book is available at URL:

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

# Changing Paradigms: Designing for a Sustainable Future



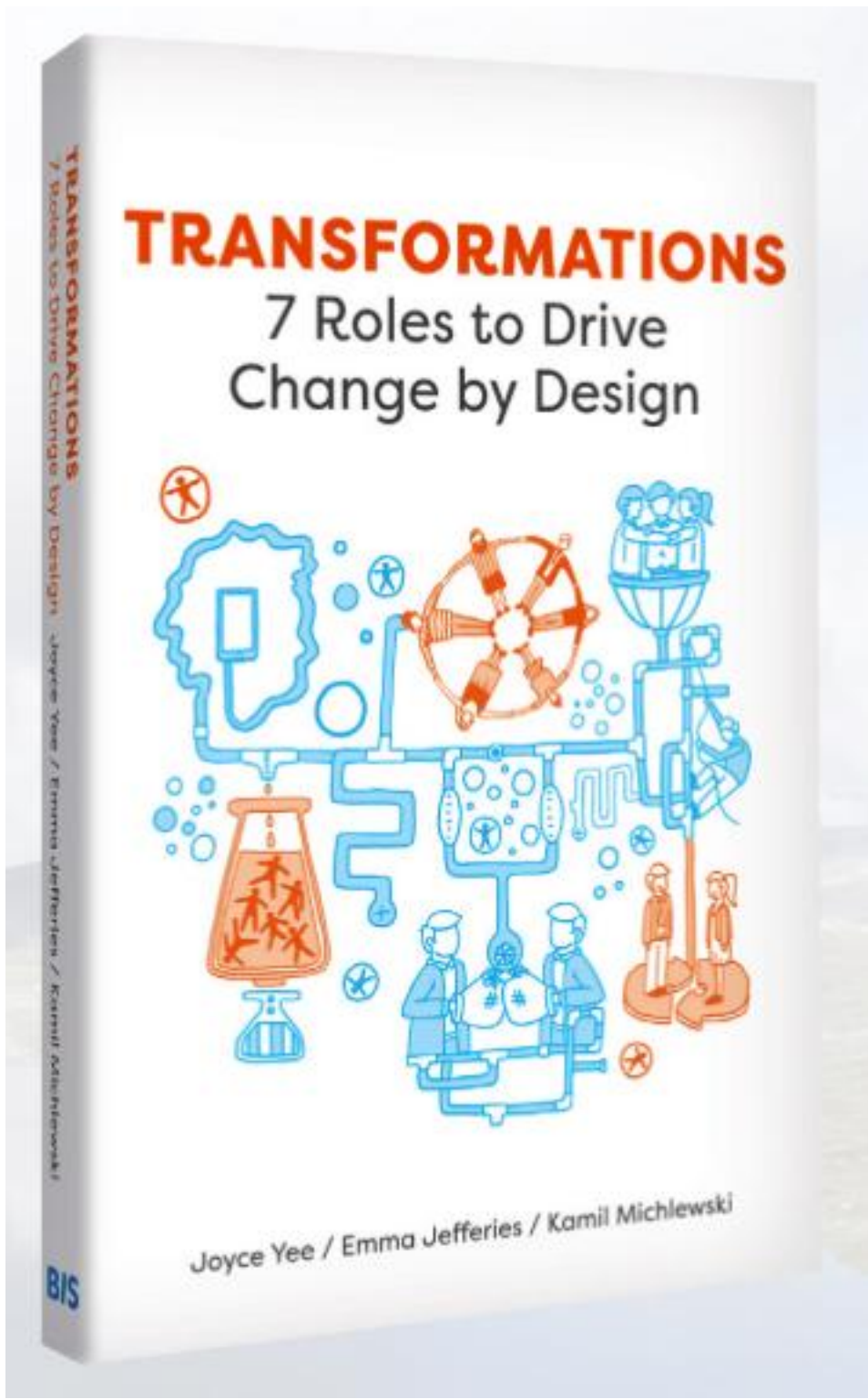
# New iBook / ebook: HOW TO DO ECODESIGN



Practical Guide for Ecodesign – Including a  
Toolbox

Author: Ursula Tischner



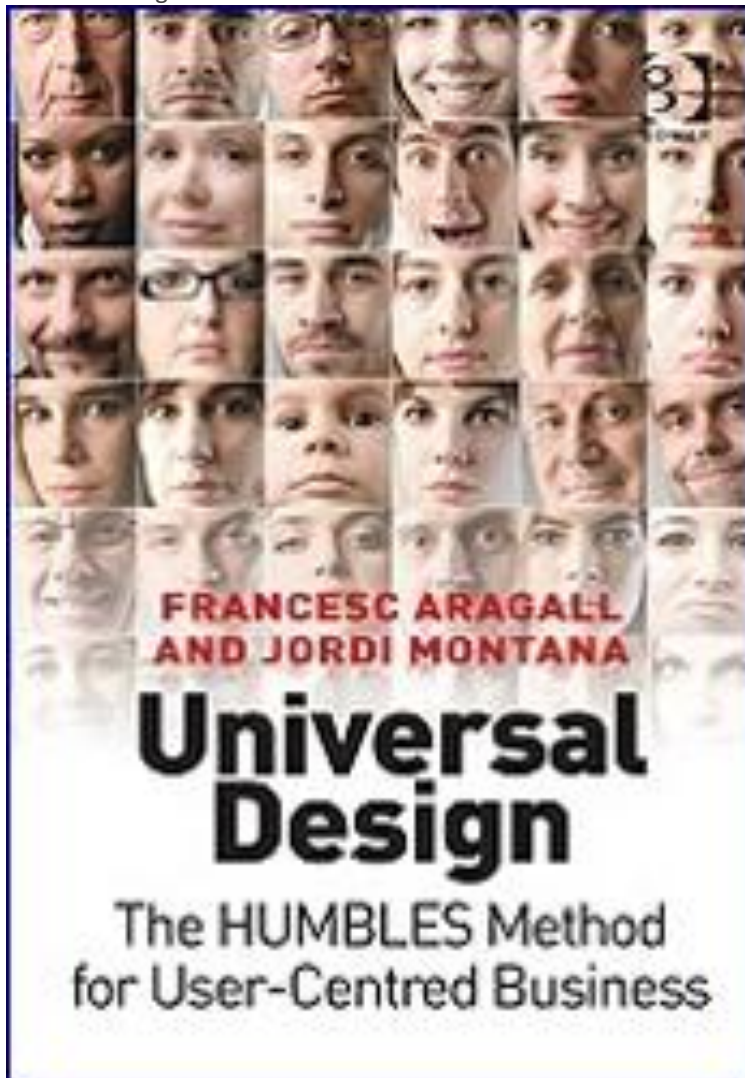


Arnar Árnason and Sigurjón Baldur Hafsteinsson

# DEATH AND GOVERNMENTALITY

Neo-liberalism, grief and the nation form





“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

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+inventrs](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+inventrs)

# APPEAL:

**For CHI 2021, we have just published an open call for expressions of interest for people to get involved. We are writing to you as we feel you are well positioned to nominate people who have the background and skills to become involved in 2021. We ask you to nominate people, as there is an often untapped mass of dedicated and motivated volunteers seeking greater involvement in the organisation for CHI.**

**This call targets the worldwide HCI community and seeks to collect expressions of interest from people in helping to organise CHI 2021 by 5pm GMT on May 6th 2019 here: <https://forms.gle/L68KQ3kqT5hixfhN8>**

**Best,**

**CHI 2021 General Chairs: Yoshifumi Kitamura and Aaron Quigley  
CHI 2021 Technical Program Chairs: Takeo Igarashi and Katherine Isbister**

**Professor Aaron Quigley  
<https://aaronquigley.org>  
[aquigley@st-andrews.ac.uk](mailto:aquigley@st-andrews.ac.uk)**

**(On sabbatical)**

**CUTE Center, National University of Singapore Jan - July 2019  
Tohoku University of Japan July 2019**

**(Otherwise)**

**Chair of Human Computer Interaction,  
SACHI, School of Computer Science,  
University of St Andrews, Scotland  
Fife KY16 9SX, Scotland**

**(Volunteer)**

**ACM SIGCHI Vice President for Conferences  
ACM CHI 2021 General Co-Chair**

**The University of St Andrews is a charity registered in Scotland : No SC013532**



# News

1.

## **Top International Educators Convene for Symposium on the Future of Indian Higher Education**

**Bangalore: At the College Board's 2nd annual India Global Higher Education Alliance Symposium, leaders from the Alliance's member universities gathered with prominent experts from the World Bank, Brookings India, Manipal Education Group and the Consortium for Higher Education Research in Asia (CHERA), to discuss how to advance higher education in India.**

**Leaders held a wide-ranging roundtable on internationalization and innovation in Indian higher education. Dr. Francisco Marmolejo, the global lead for tertiary education at the World Bank, moderated the keynote discussion where he probed on the challenges of providing high quality education at the scale needed to meet India's demands. Panelists engaged in honest dialogue about the key challenges in Indian higher education while offering solutions for consideration.**

**Dr. Mohandas Pai, Chairman of the Board at Manipal Global Education, laid out a series of recommendations for India Global Alliance members to consider, including, increasing autonomy at leading universities, and connecting university researchers to India's national laboratories. He also offered pragmatic suggestions on how to increase faculty research.**

**Dr. Shamika Ravi, who is a member of the Economic Advisory Council to Prime Minister Modi and the Director of Research at Brookings**



**India, argued that while it is helpful to look at diverse examples of successful institutions from around the globe, members of the Alliance should not merely import policies and practices from the West. Rather, universities in India need to consider the country's specific needs.**

**Dr. Gerard Postiglione, an Honorary Professor at Hong Kong University and Coordinator of the Consortium for Higher Education Research in Asia (CHERA), remarked on the energy that is building in India around reform in higher education. Dr. Postiglione advocated that the time is right for Indian institutions to shift away from lecture-based classes to more project-based coursework.**

**As the group reflected on the work that institutions must do to transform themselves into true global centers of learning, James Montoya who is the head of Membership, Governance and Global Higher Education at College Board and a former vice provost of Stanford University in California, USA, reminded the group that institutions must put students at the top of their priority list.**

**This powerful and passionate discussion laid the foundation for members of the India Global Higher Education Alliance to begin to develop concrete actions that Alliance members can take as individual institutions and as a collective consortium to improve the transition from secondary to higher education.**

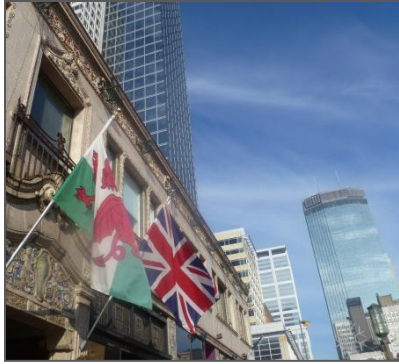
**Institutions are clearly valuing these opportunities to pause from their daily work and engage in through-provoking discussions as more universities are seeking to participate in the India Global Higher Education Alliance, an international consortium of prominent institutions that have come together to foster collaboration and sharing of global best practices to advance access and excellence in higher education. The College Board announced that eight more innovative Indian universities, as well as the University of Melbourne, in Australia, have joined the Alliance. Alliance members in India accept the SAT exam from students within India as well as international applicants as a part of their admissions process.**

**The eight new Indian institutions are:**

**Anant National University**  
**Gandhi Institute of Management and Technology (GITAM)**  
**Jain University**  
**O.P. Jindal Global University**  
**Sri Sri University**  
**SRM University,AP-Amaravati**  
**SRM University Delhi-NCR, Sonapat**  
**World University of Design**  
**The University of Melbourne joins as an Affiliate Member, adding an Australian perspective to the dialogue on the transition from secondary to higher education through a global lens.**

***(Source: India Education Dairy.com)***





## Programme and Events

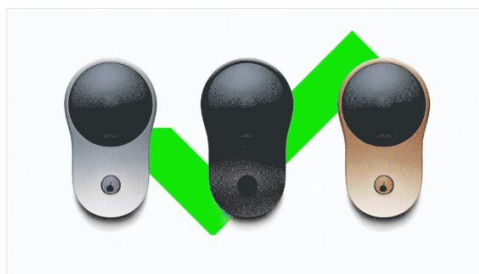
THE ANNUAL INTERNATIONAL BERKELEY UNDERGRADUATE PRIZE FOR ARCHITECTURAL DESIGN EXCELLENCE 2019

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Click on photograph for details.



### THE SEARCH FOR EXCELLENCE IN DESIGN

Good Design Australia is calling for Australian and international entries to the 2019 Good Design Awards. Through the annual Good Design Awards program, we recognise and celebrate excellence in cutting edge design and breakthrough innovation. Entries close 28 March 2019. [Find out more about the 2019 Good Design Awards here.](#)

[ENTER 2019 AWARDS](#)



### **NEW FOR 2019 - THE WOMEN IN DESIGN AWARD!**

Good Design Australia is extremely proud to announce the new Women in Design Award, that will be presented as part of the 61st annual Good Design Awards.

The inaugural Women in Design Award seeks to recognise and celebrate women who have made significant contributions to the industry and hopes to encourage a more diverse and equal representation within the industry and leadership roles in particular within the design and creative industries.

The Selection Committee for this Award will comprise of Australian and international leaders in the design and creative industries. Confirmed Selection Committee Members include:

Liza Chong, CEO INDEX:Design to Improve Life (Denmark)

Margaret Petty, Executive Director of Innovation and Entrepreneurship UTS (NSW, Aus)  
Sarah Weir, CEO Design Council (UK)  
Claire Beale, Executive Director of Design Tasmania (TAS, Aus)  
Eunjo Maing, Director / Head of D-TEC at Korean Institute of Design Promotion (Korea)  
Trish Hansen, Founding Principal Urban Mind (SA, Aus)  
More to come...



Design  for all  
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**Good Practices 2019 candidatures**



Now you can submit your project, product or service as  
Design for All Good Practice opting to  
the International Awards Design for All Foundation 2020





International conference

## Global Challenges in Assistive Technology Research, Policy & Practice

August 27-30 2019 Bologna Italy

[www.aaate2019.eu](http://www.aaate2019.eu)

### Call for Papers

Basic research & Applied research  
Special thematic sessions

Deadline for submission:  
28 February 2019

### Call for other contributions

Educational sessions  
Policy sessions  
Product and Prototype presentations  
*See website for deadlines*



### Conference topics

- ↓ Assistive technology (AT) for cognitive, sensory and motor disabilities
- ↓ AT service delivery systems, practices, quality and outcomes
- ↓ AT education, training and professional development
- ↓ AT in low- and middle-income countries
- ↓ Emerging and innovative AT
- ↓ Alternative and Augmentative Communication
- ↓ AT and social assistive robotics
- ↓ AAL, smart environments and IoT
- ↓ eAccessibility
- ↓ Universal Design
- ↓ Mobility and seating solutions
- ↓ Ageing and technology
- ↓ AT for rehabilitation
- ↓ AT, virtual and augmented reality
- ↓ AT, digital health and innovation in care
- ↓ AT in education
- ↓ Policy and social aspects related to AT

Don't work in isolation!  
Join AAATE! Join the Bologna conference

[www.aaate2019.eu](http://www.aaate2019.eu)

#AAATE2019

[aaate2019@aiasbo.it](mailto:aaate2019@aiasbo.it)



## International conference on 'Designing for children' with focus on 'Play and Learn'

Saturday 7th to Sunday 8th of December 2019

Venue: VMCC, IIT Bombay



Spring Edition 2019 – Dateline New York



### 2019 Spark Design Awards Are All Underway

The Spark Awards are welcoming entries now. They include 10 general categories, with 2 student competitions and our brand new award for CleanTech Design. All of these awards have many sub-categories, so be sure to check them out at Spark:



### 2019 Awards

Student Design (Spring & Winter)  
Product Design  
Graphic Design  
Health, Medical & Universal Design  
Spaces & Architecture Design  
Digital Design (includes UI, UX, IXO & HCI)  
Mobility & Transport Design  
Experience & Service Design  
CleanTech Design

### Note To Students & Educators

The 2019 Spring Student Awards are open and already receiving some cool designs. Standard deadline is coming up May 20th and the Late and Final Deadline is June 12. Join Us and tell your pals!

# Advanced Course in Methods for Child Computer Interaction

## DESIGNING EXPERIENCES FOR CHILDREN

May 13-14, 2019 | Indian Institute of Technology Guwahati

This two-day course in methods for Child Computer Interaction is a bespoke course that is built on over ten years of experience in delivering such content. The first version of it was a day long course in Zurich in 2003; which was then delivered, with adaptations, in 2004 in Maryland, US and Vienna, Austria and in 2005 in Rome, Italy and Boulder, US. In 2005, a week-long course was developed for the University of Tampere, Finland, that was later delivered in Zaragoza, Spain in 2010 and at the National University of Singapore (NUS) in 2011. Shortened versions of the same course have been delivered in Vancouver, CA in 2011, Austin, US in 2012, Toronto, CA in 2014, Seoul, Korea 2015, San Jose, US 2016, Mumbai, India 2017, Montreal, CA in 2018 and Trondheim, Norway 2018.

Professor Janet Read, who manages and runs the course, has over 15 years of experience in Child Computer Interaction. She is a main author of the 2008 text book 'Evaluating Interactive Products with and for Children, San Francisco: Morgan Kaufmann' and is the Editor-in-Chief of the International Journal of Child Computer Interaction.

### EXPECTED TAKEAWAYS

Identify, and consider solutions for, the challenges of designing and evaluating technologies with and for children.

Become familiar with, and understand how best to use, the Fun Toolkit, MemoLine, Drawing Intervention, PETT surveys, and other child-centred evaluation methods.

Evaluate the advantages, disadvantages, and ethical challenges of inviting children to participate in design sessions.

Plan and organise a child-centred design or evaluation study.

## RESOURCE PERSONS



**JANET READ** is a Professor in Child Computer Interaction. Internationally known for her work on designing and evaluating technologies for children as well as for her work on text input with digital ink.



**GAVIN SIM** is a Reader in HCI who has assisted with the course in Interact 2017. His specialisms in Child Computer Interaction are in the use of heuristics for evaluation and in long term UX evaluation.



# Job Openings

## Job Opening

1.

Lead the design vertical for the company's digital assets, Spearhead Interaction Design, Interface Design, UX Design, Human Machine Interaction, and Service Design, Design websites, experiences, and applications that balance user needs, business objectives and technological constraints, Manage an external partner ecosystem of design agencies, Manage internal stakeholders, understand and help achieve their business objectives through design.

### Scope of The Position

- Design of the company's digital destinations (websites/mobile) of varied nature and purposes – corporate, financial products, SKU catalogue, transactions, customer service, publishing/blog, tools, campaign micro sites
- Varied user profiles – mass, mass affluent, 25-35 yrs, 35-45 yrs, metros, tier-2 cities and towns, English, vernacular
- Customer journey mapping based on personas for a wide portfolio of financial products – Lending, Deposits, Insurance
- Concept, Visual Design, Interaction Design
- Wireframing and prototyping tools such as Lucidchart, Balsamiq, Mockflow, FluidUI, InDesign, and Photoshop

### KEY ROLES AND RESPONSIBILITIES

#### DESIGN

- Lead Interaction Design, Interface Design, UX Design, Human Machine Interaction, Service Design, Graphic Design with emphasis on UX
- Design websites and applications that balance user needs, business objectives and technological constraints
- Work directly with external design agencies to deliver path breaking designs
- Track user behaviour and design performance and accordingly tweak the design approach
- Codify and evolve design principles
- Design for all devices and form factors
- Make the users' digital experience useful, usable and enjoyable
- Run experiments, including A/B and multi-variety tests, to evaluate and improve design performance
- Perform user research, including personal interviews with users and stakeholders, competitive analysis, online surveys, and focus groups to learn about users: their behaviour, goals, motivations, and needs
- Identify key user groups and create representative personas

- Represent the voice of the user and bring an outside-in perspective
- Continuously keep updated with the latest in the world of design, UX, UI, and user behaviour

#### **PEOPLE, STAKEHOLDER AND AGENCY MANAGEMENT**

- Drive the team's motivation, performance, and development
- Interface with internal stakeholders, understand and help achieve their business objectives through design
- Identify, onboard and actively manage an external partner ecosystem of design agencies
- Track agencies' work on an ongoing basis and use incentives and corrective measures to get the finest work out of them

#### **KEY METRICS**

- Friction Factor in the user's journey
- Quality and quantity of user interactions on the asset
- Design-led asset performance improvements
- Adherence to delivery timelines
- Business KPIs

Please forward your resumes directly to [pratima@huntsmenbarons.com](mailto:pratima@huntsmenbarons.com). You can also reach Pratima @ 8007658846





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