

# INCLUSIVE INNOVATION PROJECT

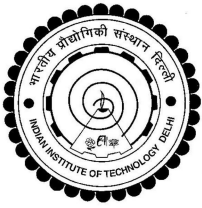
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Title: **Inclusive education for kids with ADHD**

Course: **HSL 704 2nd Semester 2019-20**

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**Indian Institute of Technology Delhi  
New Delhi**

## The Need Statement

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Provide inclusive education by establishing multiple ways of working with and enabling the management of children with ADHD with the design of an engaging tool.



# Project In A Nutshell

“Enabling environments to mobilize the energy, attention, curiosity, and focus of children”

*Howard Gardner*

The project is based on creating an enabling environment for every student in a classroom with diverse behaviors and levels of attention, specifically, the inattentive and hyperactive children who can fidget in a no-stigmatic way. Giving a sensory environment for these children in the form of a sensory toy with some positive colors in the form of a pine tree, and with its motion providing meaning, empowerment, and giving the sense of accomplishment in form of rewards with completion of a task, is very important. The teachers and parents must be aware of the mental condition- ADHD (Attention Deficit Hyperactivity Disorder) in order to align with the goals of a child and reward him/her accordingly.

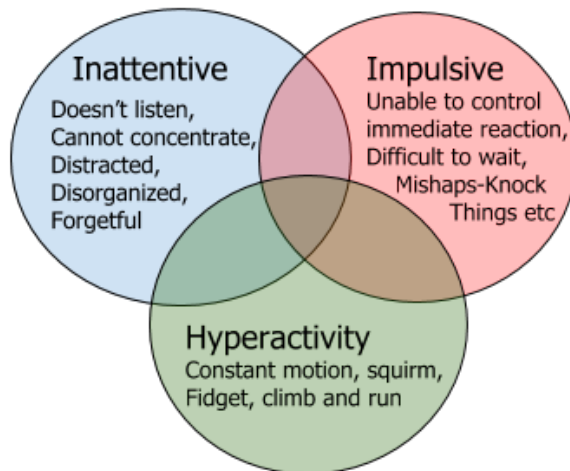
The design of a sensory toy came after many changes, iterations, explorations, and of course convincing! More than the outcome, the journey of gaining insights, clarity on the problem statement, and seeing the big picture were interesting.

## Need Addressed

This project involves developing inclusive solutions within the existing mainstream framework of the Indian ecosystem to aid children affected by one of the most common mental disorders- **Attention Deficit Hyperactive Disorder (ADHD)**.

Childhood neurodevelopmental disorders typically involve impairments in language and speech, cognition, behavior, and motor skills, and children often exhibit problems related to personal, social, and academic performance and functioning. These disorders if neglected can lead to serious consequences in later life. Children have less self-understanding and lack a stable sense of identity. They also lack an adequate frame of reference regarding reality, possibility, and value.

Thomas M. Achenbach, a Professor of Psychiatry and Psychology at the University of Vermont has identified two factors, i.e. externalization and internalization, which include the majority of childhood behavioral problems. The **externalizing** disorders in which children display disruptive behavior, often aggressive and aversive to others in the child environment. The **internalizing** disorders where a child experiences depression, anxiety, and discomfort that may not be evident to others. There are several disorders in which children display externalizing behavior, but we will be focusing on ADHD: broadly characterized by varying extent/visibility of three symptoms – **Hyperactivity, Impulsivity, and Inattention** [1].



Due to the lack of counselors and therapists, and the lack of proper information for Parents and Teachers to understand kids better, India doesn't have the best environment to study and play in, where the children face communication problems. A system of education should function in parallel with a child's development with the goal of enabling him/her to participate freely and constructively in society. Its failure to work harmoniously with a child's development would result in his/her alienation from society.

**Inclusive Dimension:** There are heterogeneous classrooms for the normal and special kids however the ADHD suffering children have problems in executive functioning due to low understanding. A dynamic, encouraging, and enjoyable environment are necessary for supporting special kids.

**Inclusion Criteria:** The project is based on creating an enabling environment for all the diverse students of a classroom, specifically, the inattentive and hyperactive children.

**Exclusion Criteria:** Non-Indian ADHD children, ADHD adults, and participants not wishing to participate, any history of prior neurosurgery, children with multiple mental disorders.

# Research Methodology

Every product has a process behind it. We completed Need validation through intensive research including the current state of the Indian Education System, where we found that Delhi HC had directed Central and Delhi government on inclusive education for ADHD on 24th October 2019 saying that: **Children suffering from ADHD are not covered under the Rights of Persons with Disabilities Act, 2016, and hence expedite policy should be evolved to provide care and proper education at public institutes like Schools.**

**Literature Review:** About 11.32% of Primary school children are affected by ADHD in India. There is a significant difference in the prevalence of ADHD between males and females, the ratio being 3:1 based on a community sampled study. According to the same study, there was a maximum prevalence of ADHD in children aged 9 and 10 years [2]. **About \$143 billion-\$266 billion is the cost of illness related to ADHD in the US [3]. 40% of the study concerns biologically oriented intervention i.e. psychopharmacology, while 4% of the studies focus on behavioral interventions, and 6% were regarding academic or educational interventions[4].** Nearly 50 to 60 % of ADHD children suffer from Adult ADHD symptoms[5]. To date, school-based interventions for children with ADHD have not received a great deal of attention. [8]

## **User Interview of an Indian ADHD student: Ritik**

- Quit medicine Ritalin after a month.
- It was hard when subjects got diversified.
- Faced sheer criticism and no support from parents and teachers.
- Himself felt that it was a character flaw due to which dumb mistakes and downfall in progress happened.
- Found @adhdalien (Instagram) and got access to a very “fruitful” community, which he wished he found a year back. Feels the need for a common platform.
- Uses dental floss as a fidget toy for focus.
- Mobile phones are not allowed in school, listen to music from mobile on the way to tuition, music helps him to focus and be aware of time.

## **User Persona of an Indian ADHD student: Priyanshi**

Age: 8 years Class: Primary

Special Need: Mild ADHD

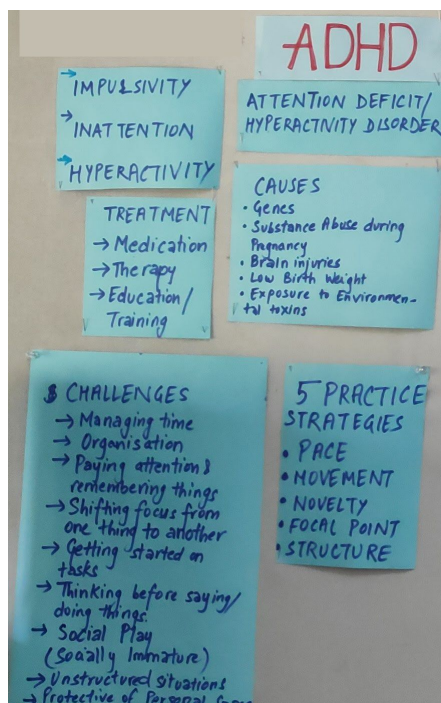
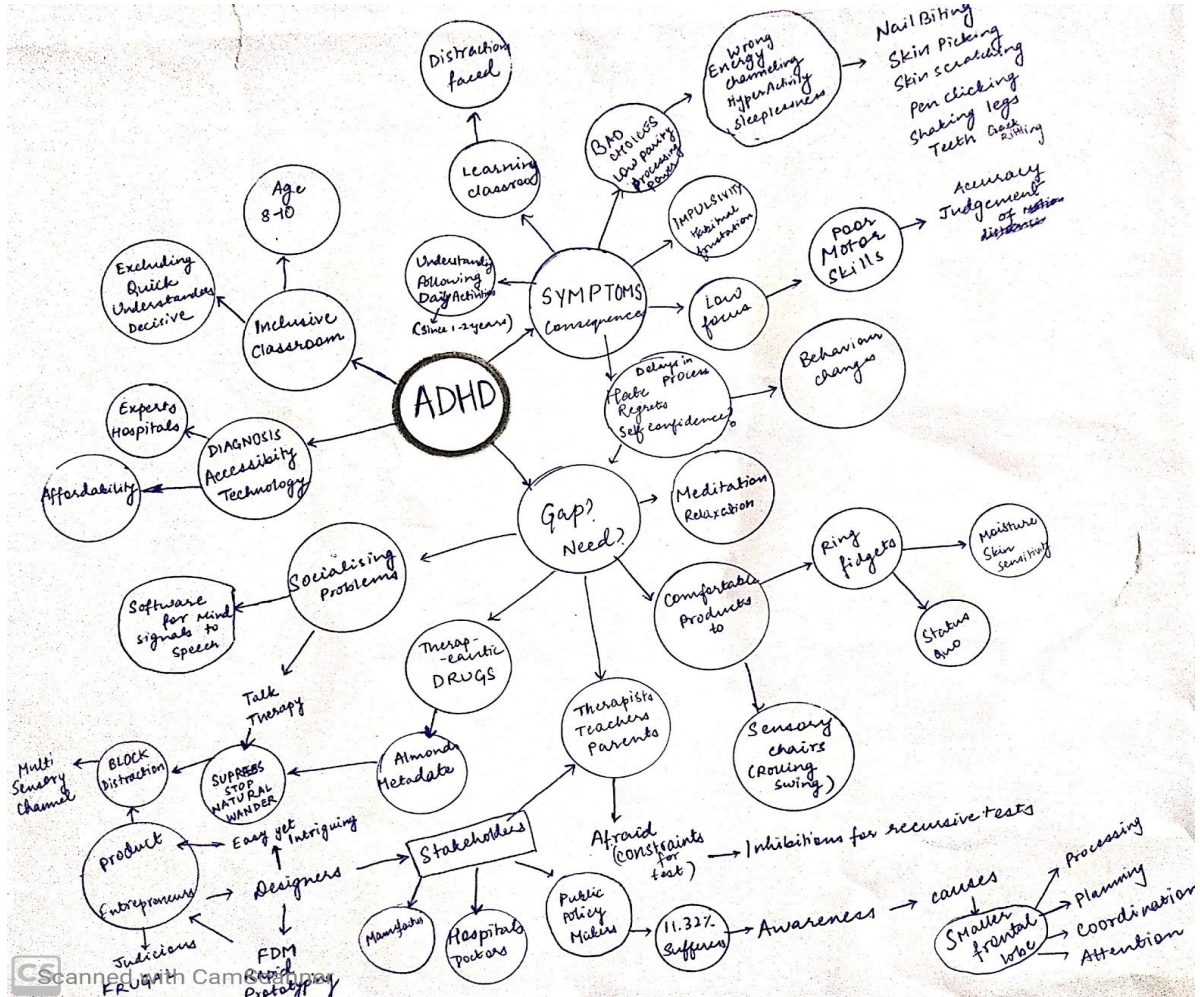
Limitation: Low Speech, Low Sight. Behavior: Hyperactive, Highly imaginative, Commanding, Running around

Likes: Pretend play, likes water

## Discussion with mentors:

- **Dr. Madhu Singh, Director of BM Health Institute, Ahmedabad** stated that parents are concerned and influenced by the societies' mental health taboos and thus tend to avoid special counselors. This leaves the ADHD spectrum highly neglected in India and hence she told: "It is a fantastic problem to work for" as only a few are working towards ADHD, it's a "condition" so we can't call the children "patients", also she shared that there are Engineers from several institutes come to her to make a software for social communication for children with limitations. She will send her contacts in Delhi who will allow us to do proper immersion after lockdown is over. She instructed us to take proper references from CDC and use the data from there. Although we couldn't complete the user trial due to COVID at her institute, she went through the google form and our presentation and gave the go-ahead.
- **Dolly Gupta, Head, Shishu Vihar Primary School, Jodhpur**  
Gave statistics about the mentally ill/unfit students in a school and the number of experienced teachers. Felt that music really helped them but if we give any toy to them the first thing those students do is to keep that in their mouth. Sent the latest NCERT Report Chapter4: Designing a Child-Friendly Learning Environment(b) Importance of Activity Areas:  
Playing in activity areas helps as children exercise their choices and explore what interests them. It provides opportunities to create, draw, manipulate, discover, learn new skills, make mistakes, modify their strategies, and gives a sense of achievement after they have mastered the activity in which they were engaged such as building a tower, fixing the jigsaw puzzle or solving a maze. It helps in fine and gross motor development as children play with water, sand, manipulate things. Children learn to solve problems, provide reasons, explore new material, make choices thus helping in their cognitive development.
- **Dr. Harshita Gupta, Teacher at Inventure Academy, Bengaluru**, which is a highly-inclusive school told-  
"All the teachers at our institute focus on the holistic development of students, paying special attention to behavior and attention issues. If we notice any concern, we report it to our in-house team of counselors. They then suggest how to deal with such situations. We also have special labs for students who need more attention. We keep all the stakeholders (students, parents, teachers, counselors) in the loop to help all such students. We also follow differentiated learning and inclusiveness." She also shared that special labs include more toys, experiments like making an instrument for explaining "Sound", this makes the subject practical and more interesting.
- **Dr. Meenu Gupta, Assistant Professor B.Ed. at SOL, Delhi University**  
She emphasized on identifying the symptoms and then treating special kids as awareness of such disorders is very less, the diagnosis is incomplete for most of the poor kids, after diagnosis, the teachers can act as moral support and provide creative challenges and special attention.

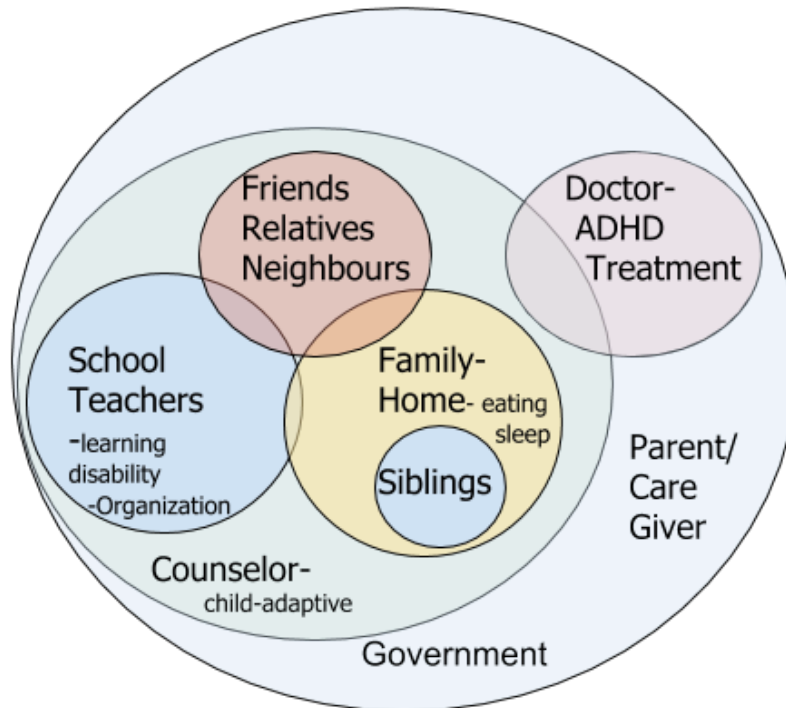




## Brainstorming and Mapping Research

For the purpose of better understanding the customer's needs, we also researched ADHD causes, and treatments and current studies on fidget and other cognitive focus devices. With the help of brainstorming and mind mapping techniques, we completed mapping research and categorized the information gathered into the following sections – Understanding ADHD (Biologically & symptomatically), Teaching challenges & Learning Tools/Practice Strategies. ADHD manifests due to certain physical and chemical changes in the brain. Physically, ADHD affected children show 3–4 percent smaller brain volumes in the frontal lobe and cerebellum. The cerebellum of the brain is responsible for coordination while the frontal lobe is responsible for the executive functions (i.e. working memory, reasoning, attention, and planning) [7]. Chemically the brain is characterized by lower levels of the neurotransmitter dopamine which also affects focus and attention [6].

## Stakeholder Analysis



## Any other method or source:

We used online resources such as documentaries on Youtube, ADHD websites, Facebook ADHD groups, Online interviewed Instagram accounts of diagnosed ADHD (with account @adhdactually)



## How did we conclude?

We concluded that design interventions at an institutional (education) level are required to establish multiple ways of working with and enabling the management of ADHD and related issues by affected children.

## Current solutions and Methods adopted

Medication (Adderall, Ritalin, Vyvanse, etc.):

It has withdrawal effects, side effects (like Autism, Cardiovascular Problems, Blood Pressure, and Nervous Conditions in Adults). Also, in recent years it has become more evident that the treatment of ADHD with psychostimulant medications (e.g. Ritalin) have only sustained effects beyond 2 years in 30-40% of patients. This observation indicates that we should accept the possibility of more than one cause for ADHD and that – from a neurobiological perspective – it is not a homogeneous disorder, and the short-acting period leading to more compulsion of increasing doses.

Therapy: Therapists, shelters' caretakers, psychiatrists who use **CBT** (Cognitive Behavioral Therapy) combined with Medications. There is behavioral training which is often used as a complementary approach to CBT like Eating habits, Exercising, Proper Sleep, etc. CBT involves a worksheet to be completed by the child for discovering the condition/level of ADHD and self-instructional training administered on a group or individual basis, to help the individual with ADHD to develop a more planned and reflective approach to thinking and behaving, including social interactions. The right therapist with which the child can connect and be comfortable often requires a lot of search with many different therapists. Due to a lack of experienced psychiatrists, who cannot understand children and thus fail. Also, too much dependence on the therapist, over-attachment, and over-relying on the therapist exist. Also, this is a very slow process, requiring time, dedication, and patience which lacks in Childhood.

Training to teachers for methods like Storytelling & IEPs:

an effort is made by educators to deal with students on their own terms through the development of IEPs (Individual Education Programmes) in accordance with their natural state(s) of development and corresponding behaviors and interests. - low no. of experienced teachers for mentally ill/unfit in schools and a high number of children in India. These children would also resist activities that were repetitive in nature like the methods of multiple labs, multiple means of expression – a solution, therefore, would have to employ/allow for dynamic means of engagement within a controlled framework. ADHD students lose interest quickly and thus using different modes of expression may become boring soon. Opposed to suppressing ADHD, learning methods should work despite wavering/wandering attention i.e. Dealing with wavering attention via Balancing difficulty levels for an equal playing field universally. All the special labs make the children habitual for low-attention thus leading to problems in higher studies.

As the fidget spinners, Mobius fidgets spinners, fidget cubes became increasingly popular, school staff took to blogging about their disruptiveness [8]. Unfortunately, many schools decided to ban the fidget spinner almost as soon as it arrived in the pockets and backpacks of their students [9]. This has exposed many students with Individualized Education Plans (IEPs) or 504 provisions to the tension of having to out themselves amongst their peers. Either they give up the fidgets which help them self-regulate and focus in the classroom, or they are given special permission, which outs them as potential targets of ridicule.



Video Games/Mobile Applications- Instead of using our senses it's said to make us lose our senses. It's proved that distractive, screen time becomes addictive and thus counterproductive. Knitting/Art, Listening to Music (Multimedia (Audio-visual learning)), Cooperative learning effect.

Rocking chairs, ball chairs, soothing chairs and chairs with barrels as a footrest, These use the mutual influence of bodily sensations on cognitive power. Startup 'Tink Things' chairs:



Playing with manipulative material like clay, sand, bubbles, etc. To participate in indoor activities such as art and craftwork and solving jigsaw puzzles, playing with educational toys, etc.

#### **Other Art but not currently implemented:**

There is a video-game-like interface via at-home play for 25 min per day, 5 days per week for 4 weeks to improve attentional performance, but these are not currently implemented in India due to lack of awareness. AVAZ is an Augmentative and Alternative Communication iPad app that helps in language and communication development (<http://www.avazapp.com>). Handwriting without Tears (HWT) is another such tool available in the market to make the process of learning to write the English alphabet smoother using a variety of materials and techniques. [8]

- 2003 study in *American Journal of Occupational Therapy* concluded that students with ADHD using ball chairs were able to sit still, focus and write more words legibly
- 2007 Mayo Clinic study concluded that a chair-less classroom increased attention and improved learning
- 2008 University of Central Florida study
  - children need to move to focus during a complicated mental task
  - especially those with attention-deficit/hyperactivity disorder (ADHD)—fidgeted more when a task required them to store and process information rather than just hold it.

**The market for these methods:** Since ADHD is a disorder that appears in varying degrees in children and the distinction between “ADHD” and “non-ADHD” has been concluded as a false dichotomy by some studies. We consider the potential market of these methods to be around the population of primary children in India, i.e 14cr.

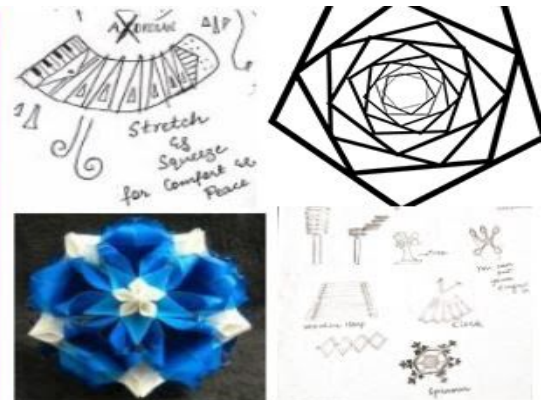
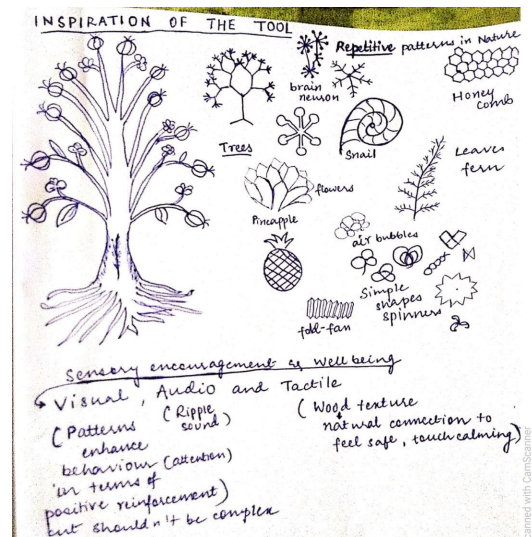
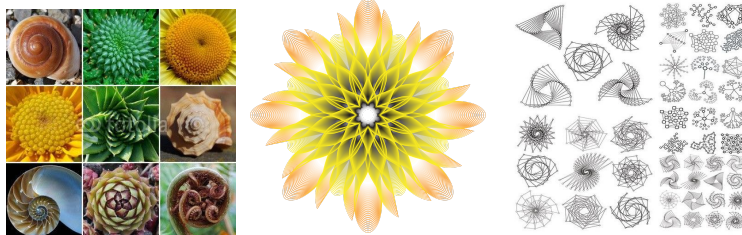
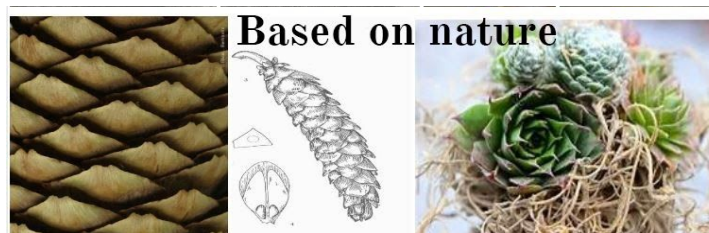
## Our Solutions

After analysis and discussion on the research documents, we found that nothing much except field-trips or physical activity sessions has been done to **stimulate nature**, although the research proving that sunlight can improve concentration and better sleep. **In nature, we find a repetitive pattern and recursive scaling phenomenon and design using the** contoured, patterned, textured, or numerical arrangements that mimic nature is known as Biophilic Design. It may be:

- Artwork (mimic shapes and patterns)
- Light fittings e.g: petals, mushrooms, pineapple shapes
- Fibonacci series.

### Why did we choose Biophilic Design?

Research findings of the biological responses according to biophilic design patterns generally show- Positive effects on **stress relief**, **cognitive skills**, and sensitivity, atmosphere, and preference. In particular, findings proved that there are effects on increasing preference for space, **relieving stress, increasing happiness, and promoting concentration**. 'Attribute' natural geometries; which are aesthetically and naturally coherent, make it easy on the eye and creates the **indirect experience of nature**. Ornamentation inspired by shapes and forms occurring in nature, Finally, the experience of space and place refers to spatial features characteristic of the **natural environment that have advanced human health and wellbeing**. [3]



### A step back for a hundred steps forward

In order to evaluate the solution we sent this to the mentors and realized to look at the big picture and teach not only to kids but also the importance of proper treatment strategies to the parents. These strategies are teaching more about movement, pace, structure which our tool could show but not complete itself without support from the parents and teachers. If the child improves in the organization by learning structure, then he/she must be awarded. If he/she can use the imagination in a positive way then he/she can find structure in nature and learn about the same. For that, we aim to develop a community where children, teachers, parents, public affairs, and policy decision-makers on inclusive education policies



**Solution 1:** If we provide a music playlist for ADHD users which works despite wavering attention and also has multiple means for different personal abilities. Music playlists can be played by the parents at home and by teachers in the school during playing time. We found details about white/pink music for focus and other genres used by many diagnosed with ADHD.

**Solution 2:** A foldable and unfoldable comic book about the positive side of ADHD. Sharing the new comics regularly with the children along with the weekly magazines can support the children along with creating awareness.

**Solution 3:** Daily Report Cards in association with Parents and Teachers. The daily report card is used to document challenges, measure important improvements, and improve classroom behaviors such as following classroom rules and building peer relationships. Each day, the teacher grades the child's efforts toward meeting his/her goals and gives a reward at home for positive performance.

**Solution 4:** A mini plant as a sensory toy. Parents can reward children with a garden or space to plant more trees if their child shows focus in studies and other positive behavior modifications. The parents are encouraged to share information related to ADHD and their child with the community groups and discuss with their children about more patterns in different types of trees so as to create an inquisitive and enabling environment for the child to study and play in. This would follow the nature-centered design or biophilic design on which we had researched. We wanted to include music also so the levels of the plant would have a note progressing along.

## Evaluation Criteria

### Emotion

- **Confidence:** Positivity, provides meaning to avoid distraction, give you your attention! Channelize hyperactivity, create a model from imagination
- **Independence:** the freedom to use in any flexible way to use for making story/bigger models
- **Sensuality:** Meeting multiple senses through multiple interactions and movement
- **Adventure:** Unlike medications and therapy, the sensory tool must encourage self-emancipation (liberating) and instead of suppressing the inattentive

### Ergonomics

- **Comfort:** Make it moving so as the ADHD need for hyperactivity is fulfilled. In recent years, the research has revealed that fidgeting and other forms of movement may actually have a positive effect on focus and retention of information [10–14].
- **Ease of Use:** Physical and cognitive ease of understanding the product.

### Aesthetics

- **Auditory:** provide a musical experience
- **Tactile:** the sense of touch
- **Visual:** needs to be aesthetically pleasing for the user to use continually

### Identity

- **Personality:** Creative and Reliable received the most votes from the short survey.

### Impact

- **Social:** Stigma-free use, make a fashion statement out of it, to motivate and influence others to join a community ("If we play together, we strive together!")
- The relationship between fidgeting and concentration has historically been misunderstood, with parents and teachers being somewhat fixated with restricting and extinguishing these behaviors [15-17].
- **Environmental:** Living in harmony with nature works with a natural material like paper and planning holistic inclusive solutions.

### Core Tech.

- **Reliability:** [open source community](#) discussion on highly used and reliable platforms and consistently used such as Facebook groups.

### Quality

- **Craftsmanship:** The fit and finish of the product.
- **Durability:** Performance over time.



**Filters used:** Feasibility: raw material (paper) easily available.

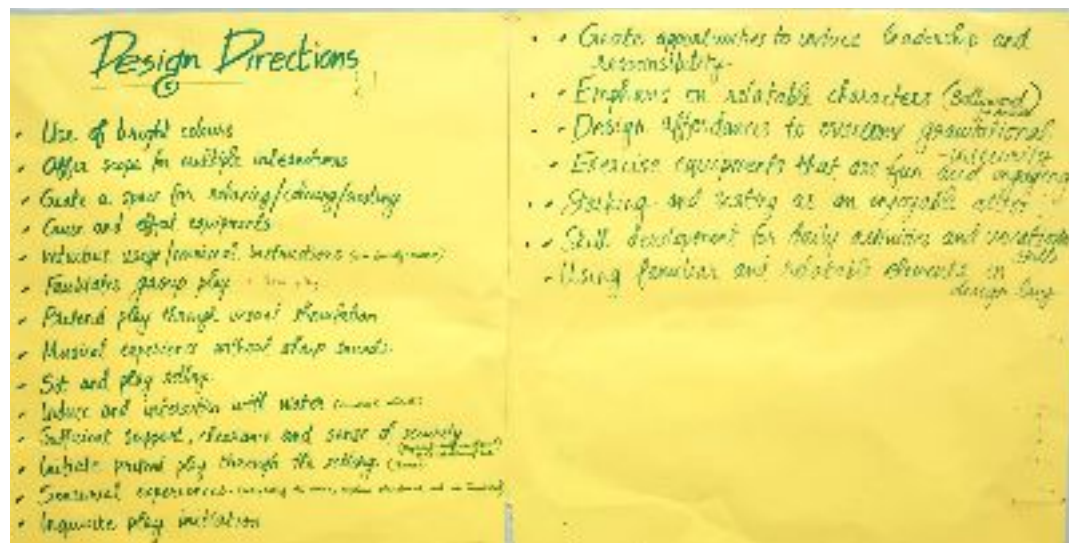
Adopting a universal design methodology, the device itself should not be exclusive to users with attention deficits but serve as a universal tool in a classroom environment.



One of the filters was simplicity in terms of the technology and to put an emphasis on keeping the solution "frugal" to ensure affordability and hence accessibility on a broad scale. This will be aligned to the inclusiveness mission and also allow the potential market to be huge.

### Stakeholder Analysis:

Talked to Designers (Srishti Singh, Experienced Toy Designer) for more design directions on textures other than paper as ADHD children are quite sensitive to the texture of their things. Also, the basic unit or toy should be of different sizes compared to the small hand size of children, which can help them in developing motor skills while playing with the units and the rotation in the plant toy. Here are some design directions she had sent from her research at BM regarding designing play equipment for ADHD and related issues:



talked to an IITD Psychologist from SCS We (Dr. Sachi Mathur) about her likeliness of the products and platform, and students about the time-blindness, the methods like listening to songs and Pomodoro technique of productivity, along with studying about fidgets. We conducted a survey with google form (<https://forms.gle/fxYyizbjbXvEKz916>) on for getting insights on the use and desires of all the three stakeholders and also the biophilic design structure and the plant got validated from BM Mental Health Institute Director and various students.



## Final Solution:

The real iteration phase of design starts when we create something and give it to the users to know their interactions with it. The first interaction is about how the product looks: form part, which is as important as the role of the functionality of the product. Using the aesthetics evaluation criteria (visual, auditory and tactile) for the four proposed solutions, we found out that the aesthetics of solution 4: have a moving toy based on plants which scales and progress with music has all the three criteria of being attractive to kids (Visual: Chosen colours yellow and blue: bright, natural and soothing, Auditory: Music and Tactile: Texture: Plastic polymers for 3D printing can be used) The plants grow with the principle of recursive self-similar and multi-scalar stems and twigs branching out from the main bark and stems, and to mimic the same we tried with choosing a repeating unit as a tetrahedron. We first focussed on joining two right-angled tetrahedrons to form a square base and then added each pair of tetrahedrons alternately on each diagonal, which surprisingly led us to a pinecone shape:



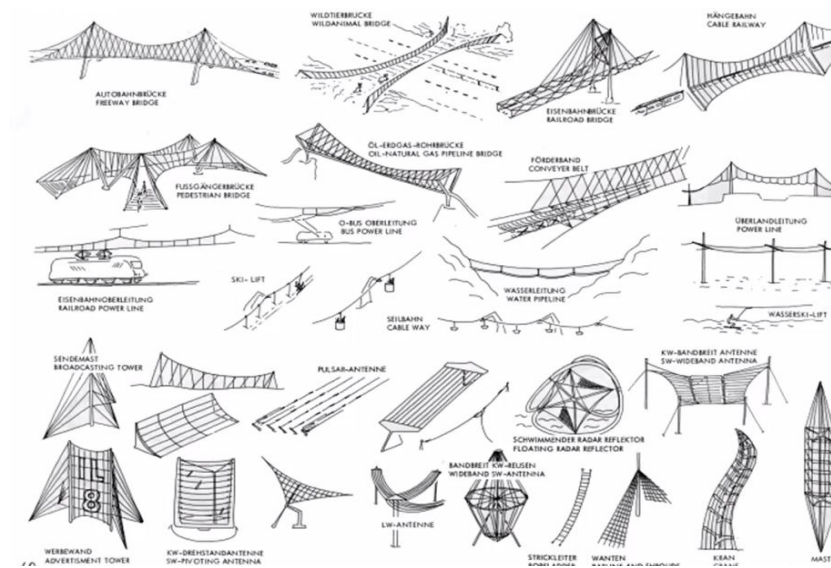
After getting some suggestions on changing the shape from the google survey we put for validation, we started exploring with joining three tetrahedrons (with the angle of 60 degrees, so as to form a triangular base) or five and realized we can create different lotus-shaped structures.

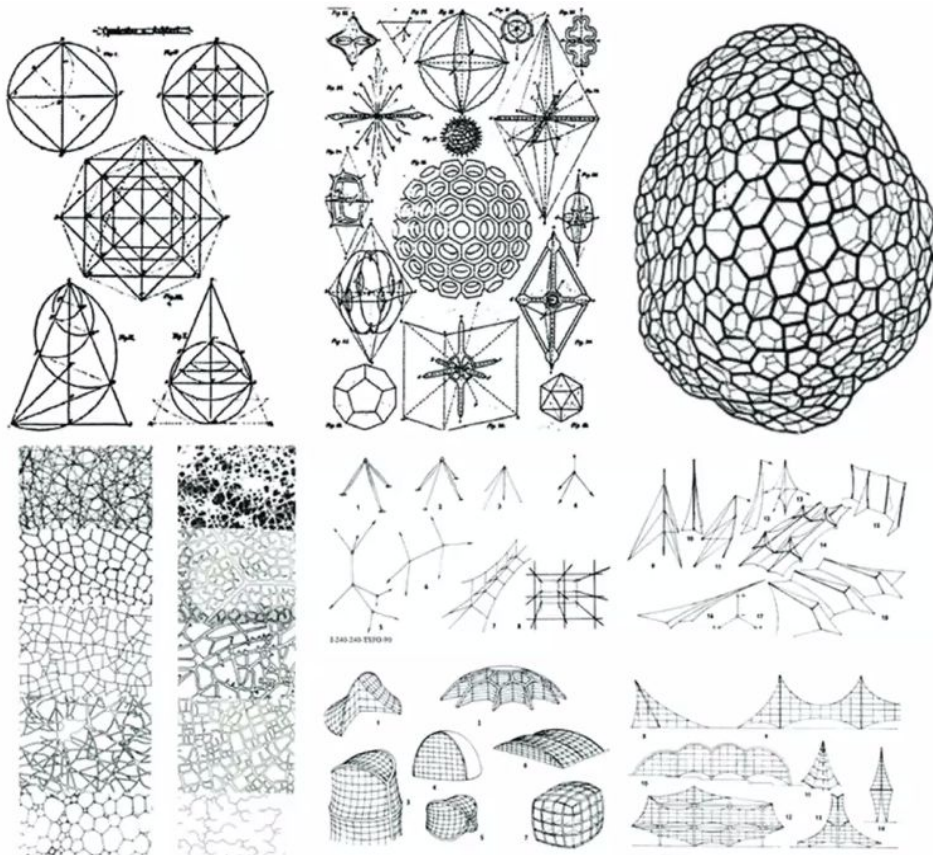
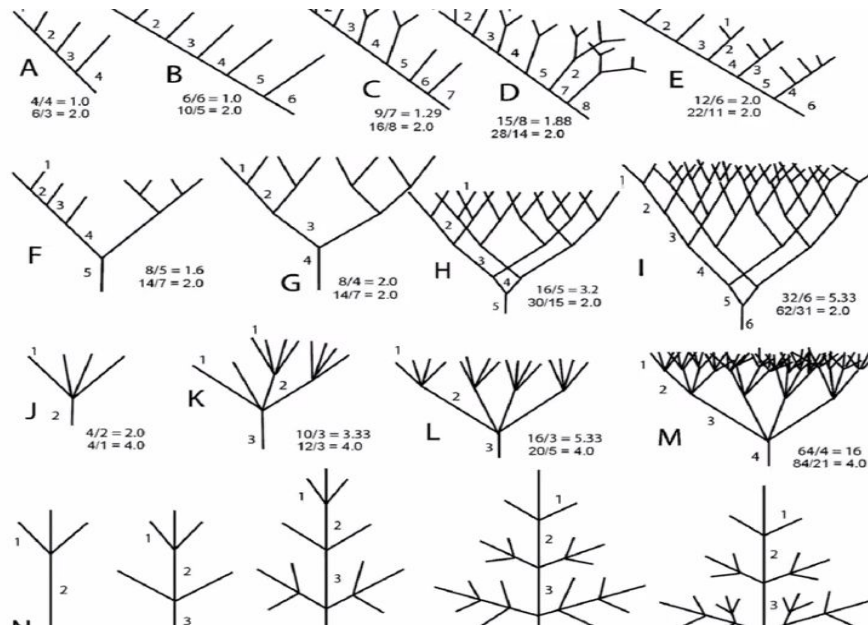
Thus, it depends on the child in what form would he/she like to aggregate the units. Having structure and movement and also building something from hands will help the children in developing motor skills, organizational skills, and help in engaging hands and explore creativity. This satisfies the evaluation criteria (giving emotion of independence to choose what to build, confidence after creating something, sensory encouragement, adventure, creative personality, ergonomics of moving hands, environmental impact, craftsmanship, and durability) as well as the filters of “frugal”. Because the children often conceive play and toys differently than what we as adults think. This toy has flexible ways of using and interacting with the product and giving them the freedom of making art as the popular scooby loops/strings did. Based on our research in the lockdown phase, we feel that this toy can be put in the market and then be iterated on depending on further research.

**Target group and a specific domain:** Kids with ADHD, specifically the one in regular schools.

## Technology component:

The proposed solution involves interdisciplinary sections of art, structures and math ("fractal") The art of origami and structures have mathematics algorithm behind it. The mesh patterns in bridges/structures arrive from repetitive scaling. We can create an infinite number of patterns from a single tetrahedron (two arrangements of linear and radial aggregation were shown) using different rules or recursive algorithms for aggregating similar units and multi-scaling geometry.





Also the new-age machines for doing generative design (additive manufacturing) where you add material for eg. 3D printing can be used for digital fabrication and manufacturing the product.

**Drawback:** Is quite hard for kids to understand the sensory toy and the pattern and recursive algorithm behind it all by themselves which might result in their loss of interest in the product. Doesn't connect them to any popular character.

## Validation of the Solution

We validated the proposed solution in a systematic process from prototyping into a tangible paper model and shared with the children and designers and started a discussion with them about how they felt about our product and the solution.

We also started asking parents of ADHD students about what they saw in the product and what puts them off.

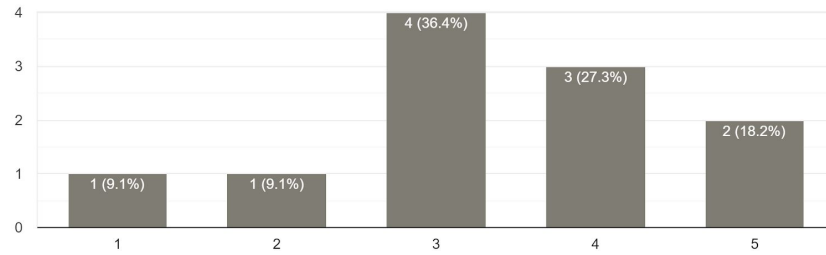


### Pilot test via Google Forms

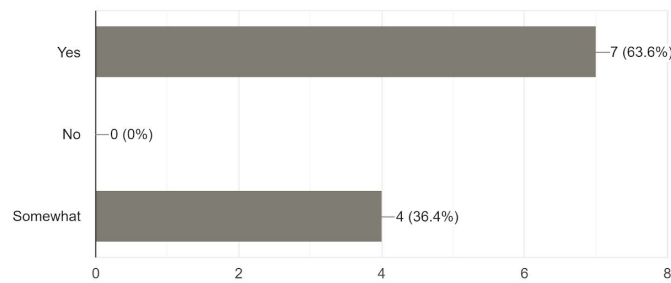
We conducted an online survey using google form with students having ADHD, toy designers, and psychologists.

Note: Given the target population of kids with ADHD the given responses are not sufficient enough to infer correct results but can be used to get a rough idea for prototyping.

How interested are you in our product on a scale of one to five?  
11 responses



Is nature inspiring, desired, and usable to encourage well-being and relieve stress?  
11 responses



**Risks:** It has small parts that can be accidentally choked by babies and pre-primary children or pets. Since it is made from paper, it is not waterproof and it can not sustain much weight if something is kept on it, it can tear off or collapse and break. We plan to mitigate the risk by creating products on a larger scale so that it can be bought again without delay. And we would sell with a caution mark against small parts (maybe choked) or increase the size of the parts.

#### Implementation issues which need to be addressed:

The network effect in developing community discussions (chicken and egg problem: if we don't have a big network it won't incentivize the new members to join and if that happens i.e. new members don't join we won't have a big network).

**We aren't infringing on any IP** as we did not copy the model making from any tutorial or internet source. It's our own work. We do have the **freedom to operate** under the toys section. **Due to the nature of this product, no extra permits or licenses are required.**

## Dissemination and Impact

How will it reach beneficiaries?



Via Mental Health Organisations and advice of therapists to the children and toy shops like Hamleys.

**Who will pay?**

The parents of the children and occupational therapists use products in therapy sessions. Parents and teachers can pay for access to support group discussions, workshops, and also choose a monthly, quarterly or yearly subscription to direct sessions with therapists.

**Cost vs benefit analysis**

The cost to inventory and capital is almost null, as the Plant model, Daily Report Cards, and comics can be made from recycled paper at any place and no material is required for a music playlist. Also in India, due to the low cost of labor, we can have a profit margin even after selling the product around 100 INR (Price of fidget and scooby strings in India). The product would generate ROI (Return on Investment) of at least 30 % with which we can innovate and extend business. While extending the business via community discussion, we might incur indirect costs of business strategy but after discounting the subscription price to the present value as a benefit-cost, we will have a profit margin of around 20 %.

**Business model**









## The Business Model Canvas

Designed for: Business Plan for HSL 704  
Inclusive Innovation Project

Designed by: Team working on ADHD

Date: 9 July 2020

Version: 1

<div>Key Partners</div> <div></div> <div>Government/NCERT/MHRD secretaries to include the following in guidelines to Primary Schools: use of sensory paper toys, story-telling and encourage teachers and parents to not criticise children as “character flaw” and understand mental illness through community discussions.</div> <div>Mental Health Doctors/Psychiatrists/Counselling Centre and Psychologists to support their patients at schools.</div>	<div>Key Activities</div> <div></div> <div>All the stakeholders form a community so as to remove stigma and instill confidence in all stakeholders.</div> <div>Story-telling from paper toys to keep immersive as well as enabling environment.</div>	<div>Value Propositions</div> <div></div> <div>Well-being stigma-free toy inspired from nature and music for ADHD children to channelise energy and focus and keep them peaceful and happy.</div> <div>Community discussions so that the child's goals/targets and reward, align with realistic expectations of Teachers and Parents.</div> <div>Happy bright but also soothing colours used for inviting and attracting kids.</div> <div></div>	<div>Customer Relationships</div> <div>Regular feedback from the customers and their parents/teachers from the community discussions forum to improve the designs of the discussions and the sensory toys. Also getting to know more understanding for inclusive education.</div>	<div>Customer Segments</div> <div></div> <div>ADHD, Autism and other fidget users, specifically the children in regular schools.</div> <div>The counsellors and occupational therapists to conduct the therapy sessions for the community discussions and training to parents and teachers.</div> <div>The teachers and parents of the fidget users .</div> <div></div>
<div>Cost Structure</div> <div></div> <div>Affordable built paper toys at fairs/ conferences and the origami training booklets or story books to make would be costing under 100 INR.</div> <div>The access to community discussions would be monthly subscription based for diagnosed ADHD children and their parents/siblings/teachers/counselors etc.</div>	<div>Revenue Streams</div> <div></div> <div>Selling of sensory paper toys and story books/training books and more nature-plants</div> <div>Community Discussions Subscribers would pay for extra workshops by our key partners.</div>			

## Marketing channels proposed and explored

As for now, we contacted the students, mental health organizations directly via Instagram and Facebook groups, emails, and chat. But after the COVID 19, we can go to the annual conferences by National Trusts, Mental Health Institutes, and Campaigns.

## Conclusion & Next Steps

## **Conclusions**

We concluded that viable sensory toys can empower the children to be inquisitive, learn about structures and organization skills by playing with symmetrically patterned toys, and finally help them in living better and easier lives along with support from the parents and teachers in the community discussions.

## **Validation of Success and Impact of the idea**

Currently, we have not been able to conduct any of the user-testing of the prototypes of our product to comment on validation of success and impact. But, the research and literature tell us that the chances of the success of the idea are good.

## **Next steps (steps to be taken)**

We will do proper user trials and iterate on the design and explore additive manufacturing options for generating more robust designs. We will take feedback and iterate on the design continuously until we reach a high saturation point. Also, in order to include more technology components in the paper model, we can provide Arduino and motor kits to children of age group 11 above with basic training on building extendable and moving models and sound alerts. They can explore more 3D models by joining the tetrahedrons in other ways (for eg. linear, radial way of joining tetrahedrons). We tried to connect to psychologists, but due to the most centers having suspended the activities, no students were available for trial and we couldn't gain proper immersive experience and complete research at therapy centers and Mental Health Schools.

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Photos: The most images are from own work, or from google images, apart from work from a presentation by Design Aware and screenshot of advertisement of Calm app for breathe in and breathe out explanation.