

# EMOTIONS OF A DYSLEXIC

DESIGN RESEARCH SEMINAR



GUIDE  
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## Declaration

I declare that this written document represents my ideas in my own words and where other's ideas or words have been included, I have adequately cited and referenced the original sources.

I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea /data /fact /source in my submission.

I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.



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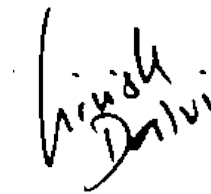
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Mumbai, India



## Approval Sheet

The project titled “Emotions of a Dyslexic” by Maharaj M A, is approved for partial fulfilment of the requirement for the degree of ‘Master of Design’ in Interaction Design at Industrial Design Centre, IIT Bombay.

Guide:

A handwritten signature in black ink, appearing to read "Vinod Dahiya". The signature is written in a cursive, somewhat stylized font.

Date: 20/07/2015



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Dysgraphia  
Attention Deficit Hyperactivity Disorder  
**Learning Disability**  
Dyslexia ADD Dyscalculia  
Auditory processing disorder

## Learning Disability

'Learning disabilities are basically neurological processing problems. These problems can interfere with learning skills like reading and writing and also math. Learning disability can sometimes affect higher level behaviors like organizing, reasoning, memorizing and planning'<sup>[1]</sup>. Learning disability in a kid is generally tested in schools and the kids are given special training to perform well. Even though it cannot be cured, one can overcome this disability and be successful in life.

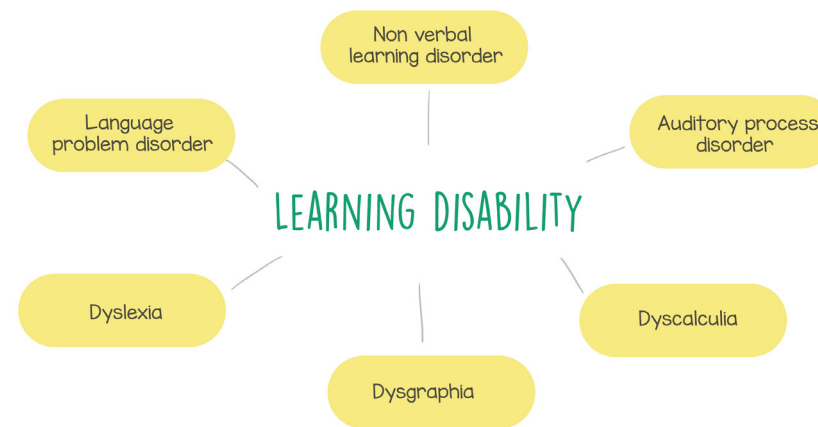


Fig 1: Various learning disability

There are seven most common learning disabilities.  
They are:

### **Auditory Processing disorder**

Children with this disorder won't be able to articulate different sounds. They won't be able to recognize subtle sound differences in a word.

### **Dyscalculia**

Children with dyscalculia find it very hard to do even a simple calculation. They might be intelligent in other aspects, yet they have problems with number and calculation

### **Dysgraphia**

This disorder affects kid's motor skills. The problem is thinking and writing the same. And also they have problems in writing in an organized way.

### **Dyslexia**

Dyslexia affects reading, writing and also other language related processing like pronouncing, spelling, articulating information etc.

### **Language processing disorder**

It is a specific type of Auditory Processing Disorder where there is difficulty in combining to sounds that form words or a full sentence.

### **Nonverbal learning disability**

Children with this disorder have trouble interpreting nonverbal cues like facial expressions or body language.

### **Visual Perceptual/Visual Motor Deficit**

A disorder that affects the processing of information from the things what a person sees.

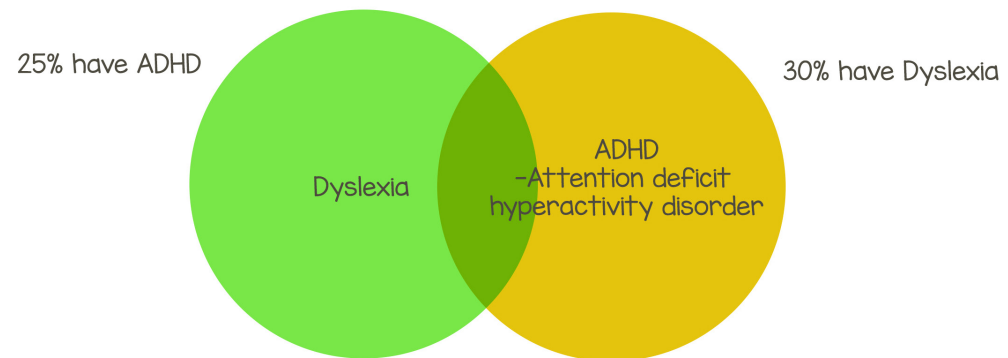
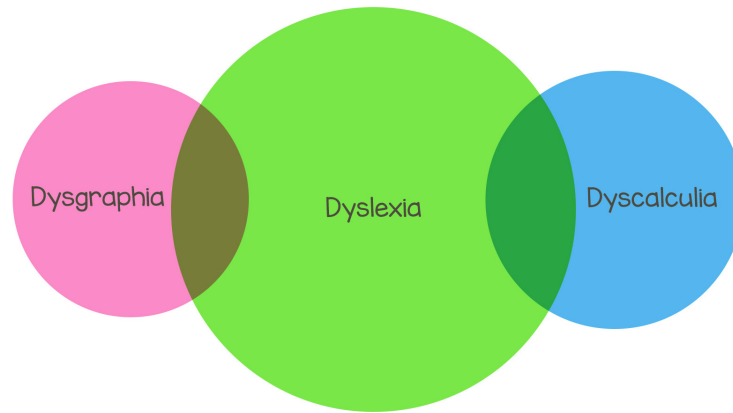


Fig 2 & 3: Relation of Dyslexia with other disabilities



## Dyslexia

'One out of five kids, or about 15-20% of the population in the world, has learning disability which is language based. Dyslexia is the most common of the language based learning disabilities'<sup>[3]</sup>.  
'About three quarters of these children can be easily helped to overcome this disability if they are diagnosed early'<sup>[4]</sup>

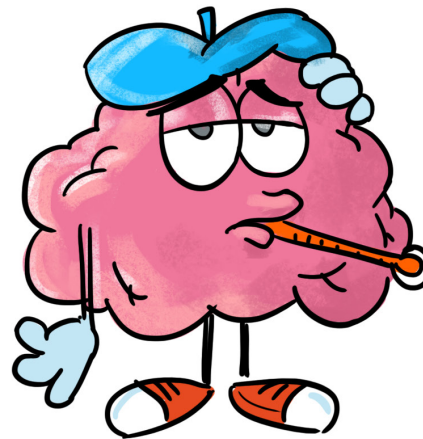
Dyslexia readers have difficulty in distinguishing individual phonemes within a word, they also find it more difficult understanding the relationship between written letter patterns and the sound they make. These decoding patterns, which are often absorbed intuitively by normal readers, should be properly taught to the dyslexia kids. For example the words "tramped" and "padded" both end with "ed" but the pronunciation is different. These kind of differences are not understood by the dyslexic kid. Where he has to undergo a special training in decoding such patterns.

The exact cause of dyslexia is unknown as it may be caused by one or many factors. But it is generally said to be a disorder which is been passed on through families. National Institute of Neurological Disorders and Stroke definition describes it as "difficulty with spelling, phonological processing (the manipulation of sounds), or rapid visual-verbal responding"

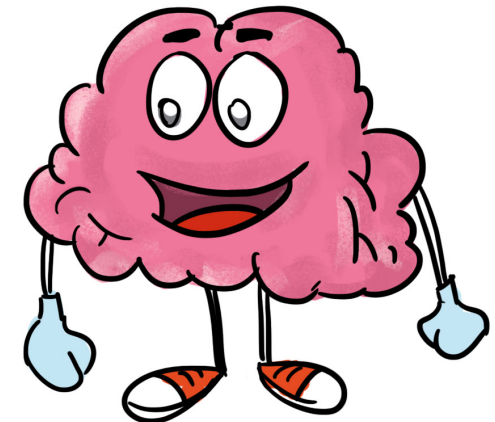
Dyslexia has to do with reading, writing and spelling, but not with thinking. When a person learns to read, there is a part in our brain called the angular gyrus which takes in the symbols and process them into information. And this part of the brain, in a normal person acts very quickly. With some practice in their childhood, it becomes easier and spontaneous. But in case of dyslexics it's the prefrontal cortex which activates which is the front part of the brain. People using the frontal brain function think more and work hard to process the information, the processing happens along with other parts of the brain also, like the visual cortex. Yet they are not as efficient as angular gyrus, so it measurably takes 5 times more energy to do the same thing as a normal person. And this is one of the reasons why dyslexic people get exhausted soon.

*"The angular gyrus is a region of the brain in the parietal lobe, that lies near the superior edge of the temporal lobe, and immediately posterior to the supramarginal gyrus; it is involved in a number of processes related to language, number processing and spatial cognition, memory retrieval, attention, and theory of mind"*

Source: Wikipedia



*Dyslexic brain*



Dyslexia is very poorly understood by almost everybody in the society, including the students who also don't know what it is that is causing their frustration and their difficulties. They just spend their life dealing with them for years without anybody really explaining them the actual reason. And the biggest difficulty is the emotional one. The first thing that we have to do is academic rehabilitation, in which we convince them that the school system is not going to beat them up and also giving them the idea that they are smart and they can learn and operate in an academic environment with success. And without someone constantly telling them that what they are doing is not right, where the fact is that what their teachers have been doing isn't.

We have a learning spectrum and education has picked up a very narrow window within a long spectrum to teach, normal kids fall under this spectrum. But the kids who fall outside the narrow part of the spectrum people label them as something else, dyslexia is the popular one among them followed by ADD. Some consider that as disease. Where it is just simply that these kids does not fall under the learning system which is existing. They just learn outside the spectrum where they have to be taught differently. The real cause of the problem is how we are teaching and not how we are learning. And so we are labelling not the method of teaching but the method of learning when the problem is reverse, where we are trying to fix the effect and not the cause.

## **Language Problems of Dyslexia:**

**Phonology:** Irregular words, homophonic words and also pseudo homophonic words, For example, whether and weather.

**Orthography:** Orthographically similar words, addition and audition; number and letter recognition and recollection; poor spelling, such as reversing letters, trail for trial.

**Morphology:** Discomfortable and derivational errors, .

**Lexicon and Syntax:** New words, long word, word additions, word recognition and recollection, confusion of small words.

**Discourse:** Fixation problems; punctuation recognition; long sentences and paragraphs; and poor comprehension

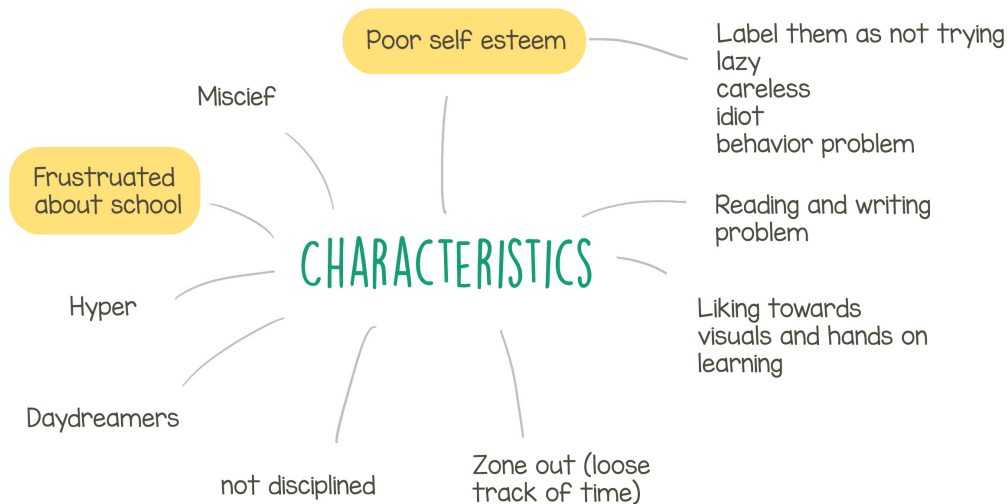
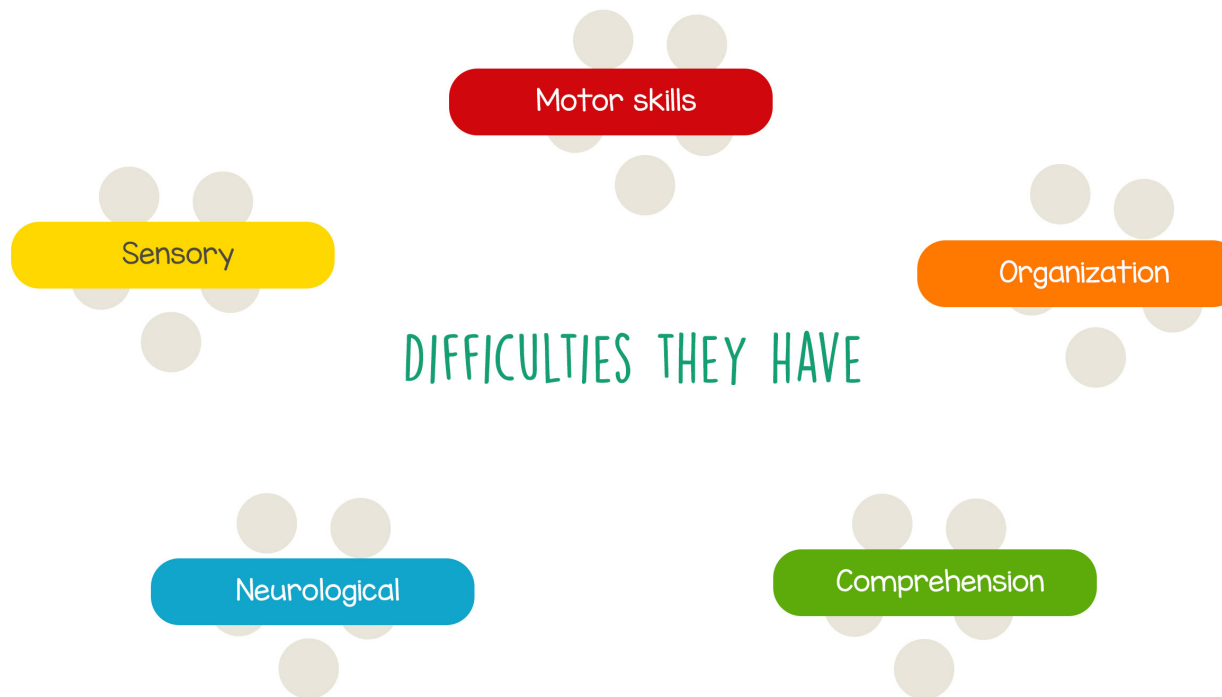


Fig 4: General characteristics of a dyslexic kid

## Characteristics of dyslexic children

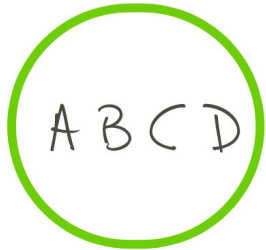
- 'They are bright, intelligent but unable to read write or spell any word.
- Most of these kids are hyper or daydreaming. This is because they have attention deficit hyperactivity disorder, which makes the others label them as 'not trying hard' or 'behavior problem' or 'Careless' etc
- High in IQ, but does not perform well in written test. But good in oral.
- Eventually these kids tend to have poor self-esteem, easily frustrated and emotional about school reading or tests.
- They are talented in art, music, dance, business, sports activity, storytelling, designing, constructing and engineering.
- Seems to daydream all the time and loses track of time
- Learns best through observing, doing things, experimenting, though tactile things and also visual aids'<sup>[4]</sup>



*Fig 5: Categories of dyslexia*

The major problem of dyslexia were listed and then categorized into five groups as shown above. In this neurological is completely scientific treatment where normal training cannot help the kids to improve. Other difficulties have the possibility of tackling by training and other methods

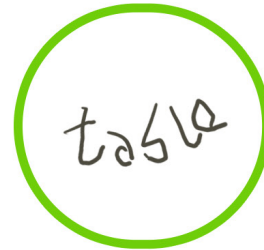
## Major difficulties *Comprehension*



difficulty learning alphabets



Letter or word reversal in reading or writing



Poor Handwriting



Difficulty in word retrieval or naming problem



Difficulty in reading and understanding what they read



Difficulty in putting thoughts on paper



Difficulty reading with expressions, punctuations



Can count, but finds it hard to deal with money



Difficulty in processing words

## Major difficulties

*Sensory, organization, Motor skill, Neurological*



difficulty in learning sounds of the letters



Difficulty distinguishing different sounds in a word



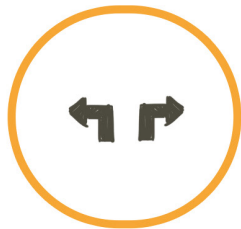
Problem in body coordination



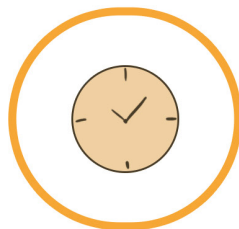
Difficulty in multi-tasking



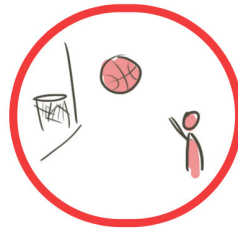
Difficulty in organizing skills



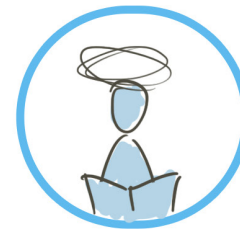
Difficulty following directions



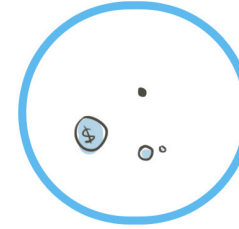
Difficulty in time keeping and concept of time



Other motor skills



Dizziness while reading

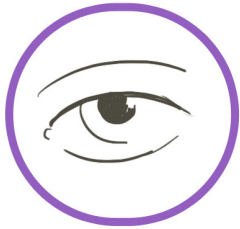


Problem in focusing on a smaller portion

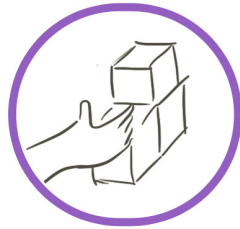


Seeing non-existent movement in letters

## What they are good at



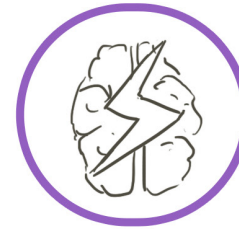
Visually strong,  
Primary thinking is  
in visuals



Good experiential  
memory



High in IQ



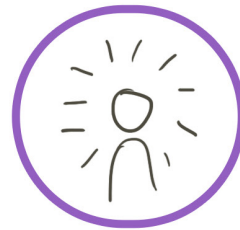
Use brain ability to alter  
and create perception



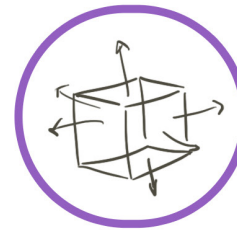
Highly aware of  
the environment



More curious than  
average



They are highly intuitive  
and insightful



They think and perceive  
multidimensionally



They can experience  
thought as reality



Holistic, sees the big  
picture

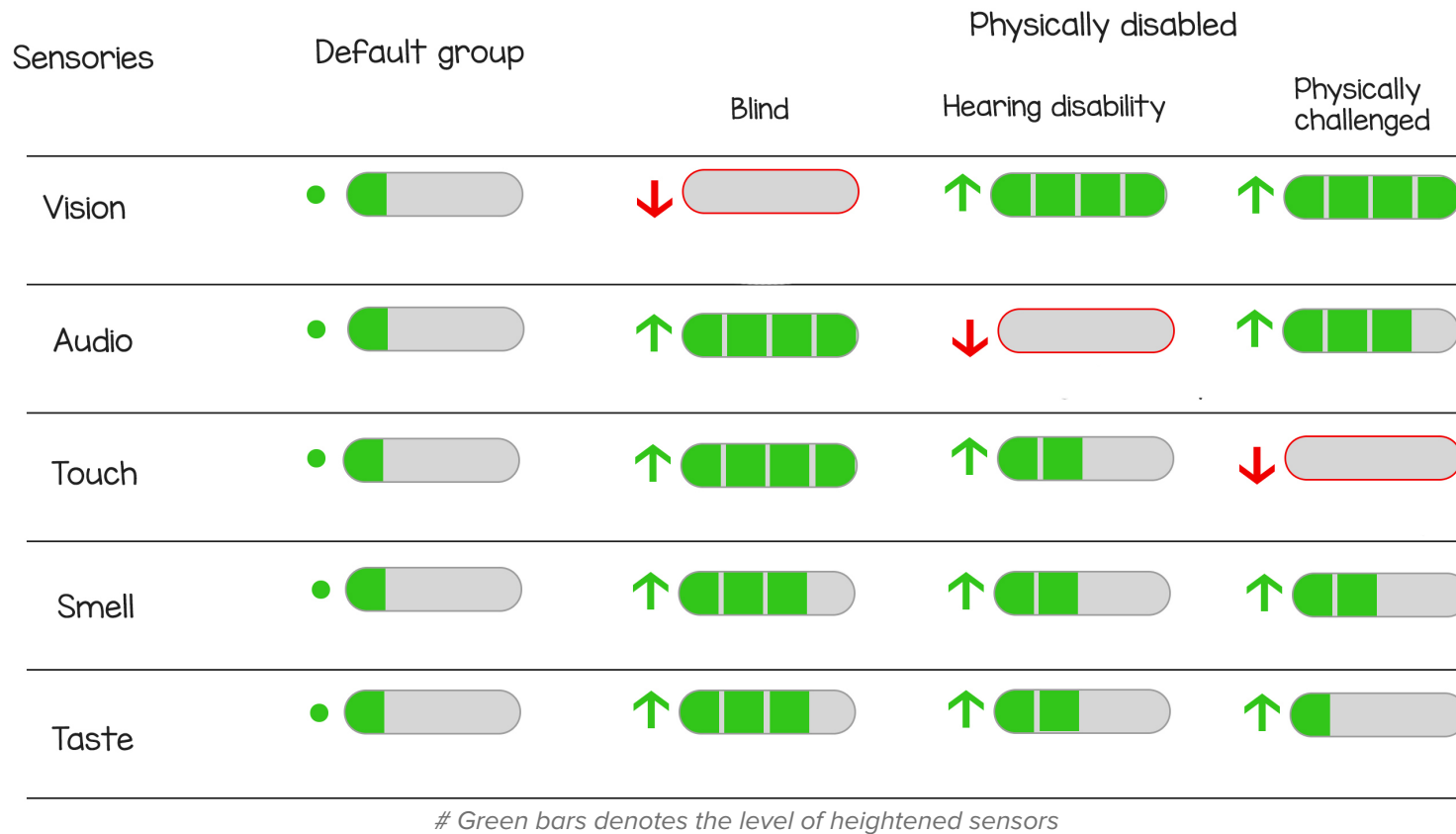


Fig 6: sensory comparison between a normal person and a physically disable person

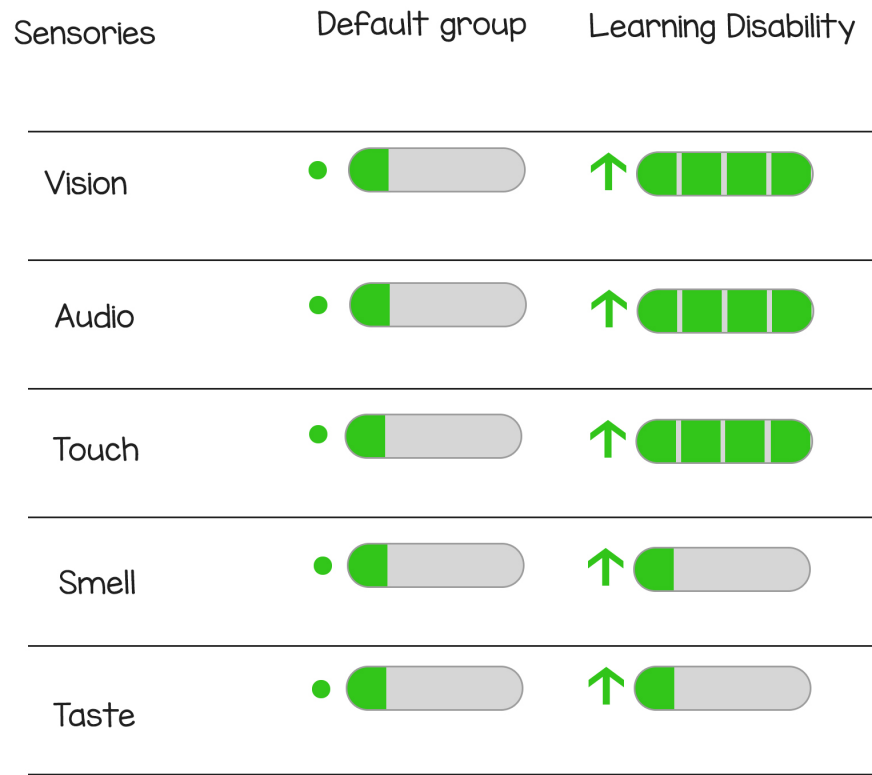


Fig 7: Comparison between a normal person and a person with learning disability

## Sensory based understanding

It is said that if a person has lost his one sense (eg: sight) the other senses tend to grow. But the actual fact is that the senses do not grow, but the concentration on those senses grow. Concentrating on all sensory is difficult so obviously when one sense is lost we try to compensate that sensor's output from others which in turn leads to more concentration on the rest of sensory to measure the environment. So a small study was done comparing the physically challenged to a normal person and how they use their senses and which senses are more used. Learning disabled people also have a gift of heightened senses, they are good at acquiring and retaining knowledge from senses rather than from reading

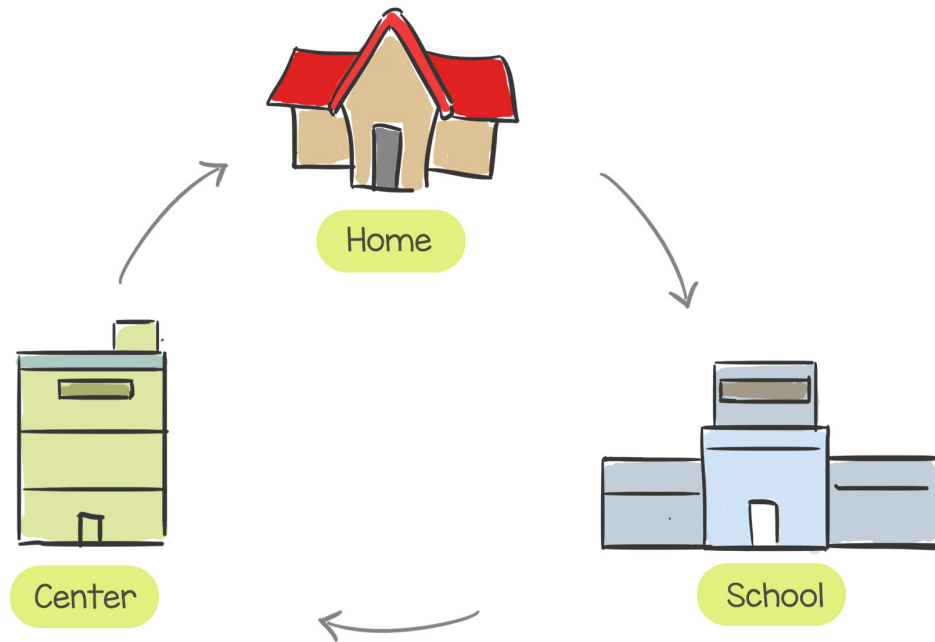
These positive points in a dyslexic can be used to their advantage in teaching them subjects in a method they understand. Writing and reading is not a natural ability, it's an obtained ability. It is there only for a few thousand years and it is not hard wired into the human genetics. But acquiring knowledge from sensory like vision, audio, speech, all these are hard wired into humans so it is easier to use this ability to learn.



Your brother is better I want to quit school  
**Emotions** Am i stupid ?  
I cry everyday I want to go home  
I dont have time to play

## **One day in the life of a dyslexic kid**

Based on data collected from students and other online testimonials mind map has been created describing the things that happens in the life of a dyslexic kid. This is one of the many scenarios which shows the things the kid undergoes in his day today life



The first difference of the dyslexic kid from a normal kid starts from here. Where the normal kids goes to school from home and back to home, kids with dyslexia has to go to school from home then to the special tuition centre (If they are attending the regular school with other kids) and back to home.

## At home

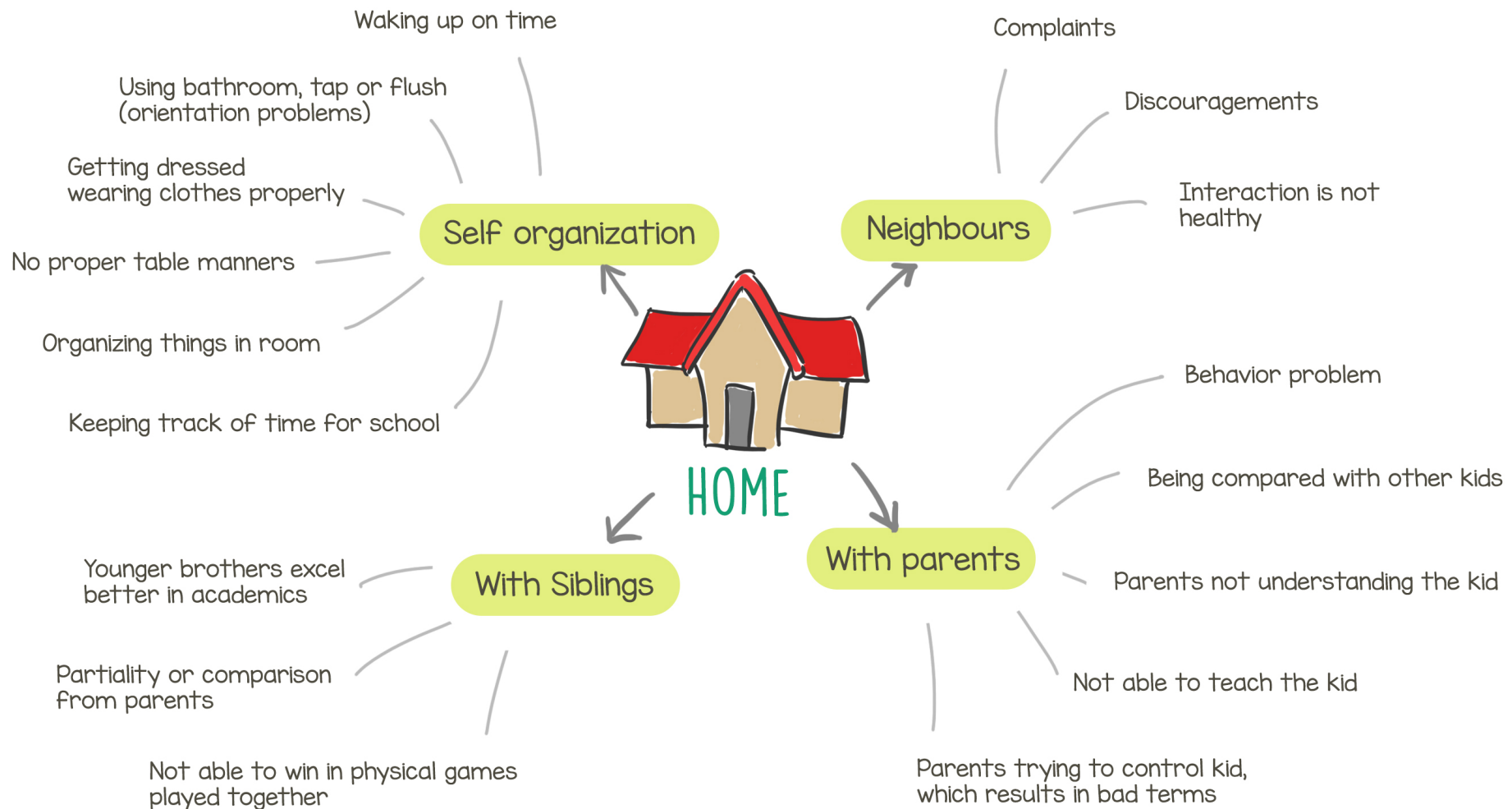
Kids in general get most of the positive vibes at home, it is very important that their bonding and behaviour towards their parents is good, the kid's life changing experiences starts from here. This vital point is also the starting point for the dyslexic kids where things does not go smooth. Most of the parents are unaware about dyslexia or the people who knows about it has a wrong perception about it, they consider dyslexia as a disease or a mental disorder. It is hard for many parents to realise or consider dyslexia as a simple learning disability. Because of these reasons parents doesn't know how to behave or understand their kids.

As most of the dyslexic kids have ADHD (Attention deficit hyperactivity disorder) it is hard for a kid to concentrate on a particular thing. And also they won't be able to understand the multiple instructions given to them, these makes them look mischievous and kids with behavioural problems. And they also have poor organizing skills, and parents try to control their kids which at some point leads to bad relationship. The major reason is because the parents does not know how to deal with the kid. They do not know what the right way to teach their kids.

Adding to their problems they start getting different treatment from neighbors and friends and some-times siblings too. The

kids start feeling insecure about their own ability, they come to a conclusion that they are not capable of doing anything as they see other kids do things very easily where these kids has to suffer and put so much energy into doing things, finally leading to shattering of their self-confidence.

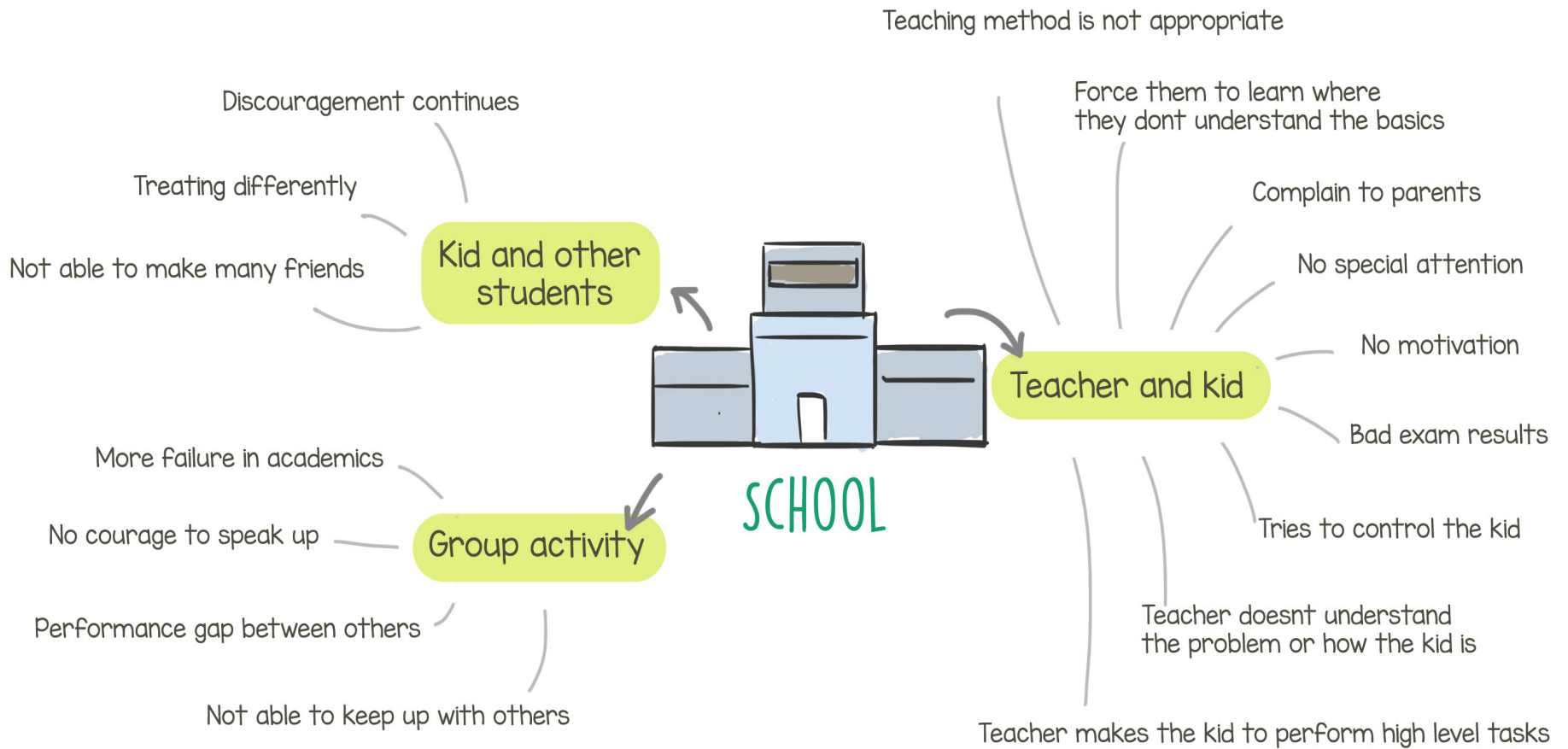




## At school

Moving from home to school, they find it very hard to keep up with other kids. They lose hope as they can clearly see that they have to spend more time on a simple task, where the other kids do it very easily. Over that the other students start noticing their disability and some of them make fun of it and some of them try to avoid them. On the other hand the teachers won't be able to give individual attention and also they are not keen on listening to the kid and finding out his actual problems. Most of the teachers believe that these kids are just not trying enough or they feel that they are lazy and stupid.



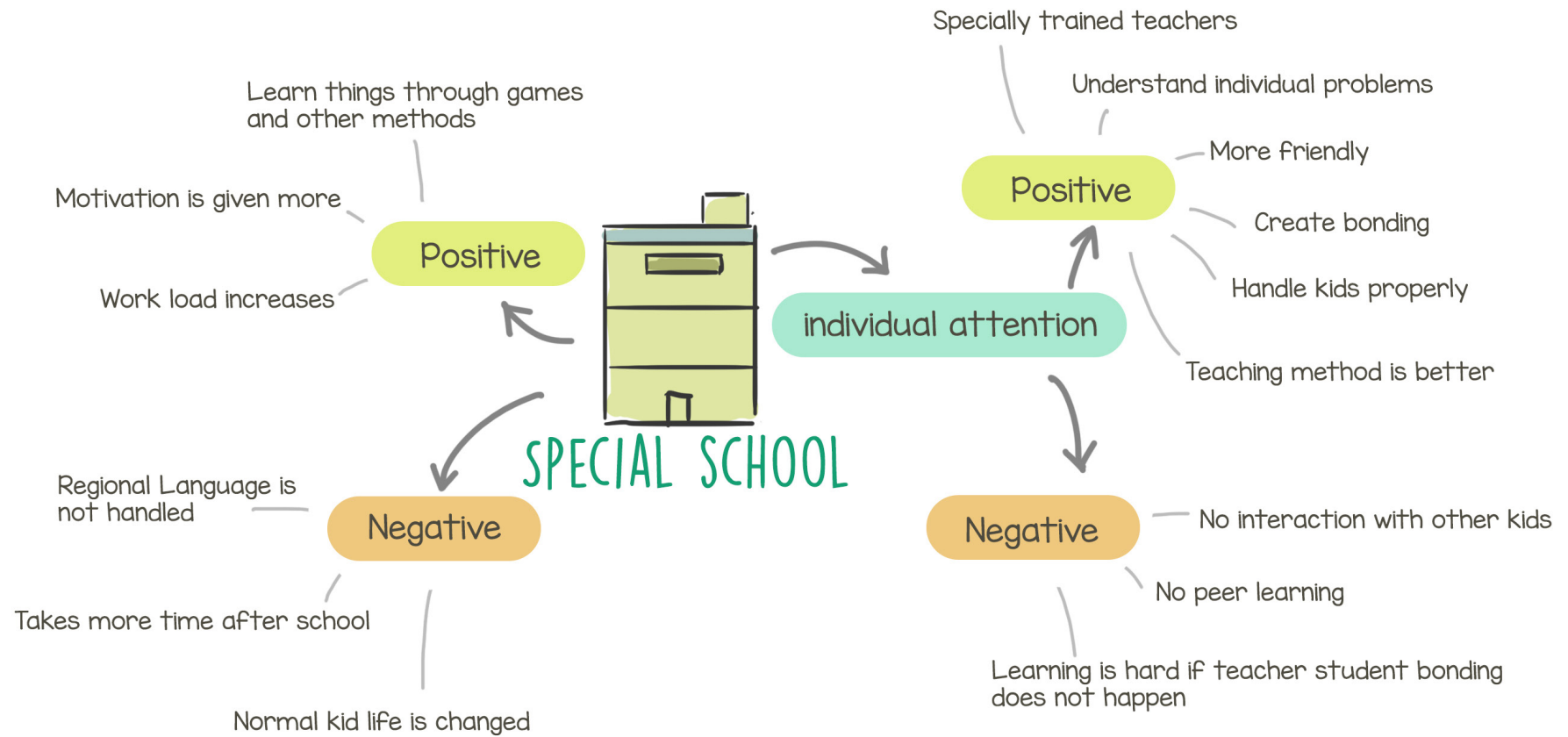


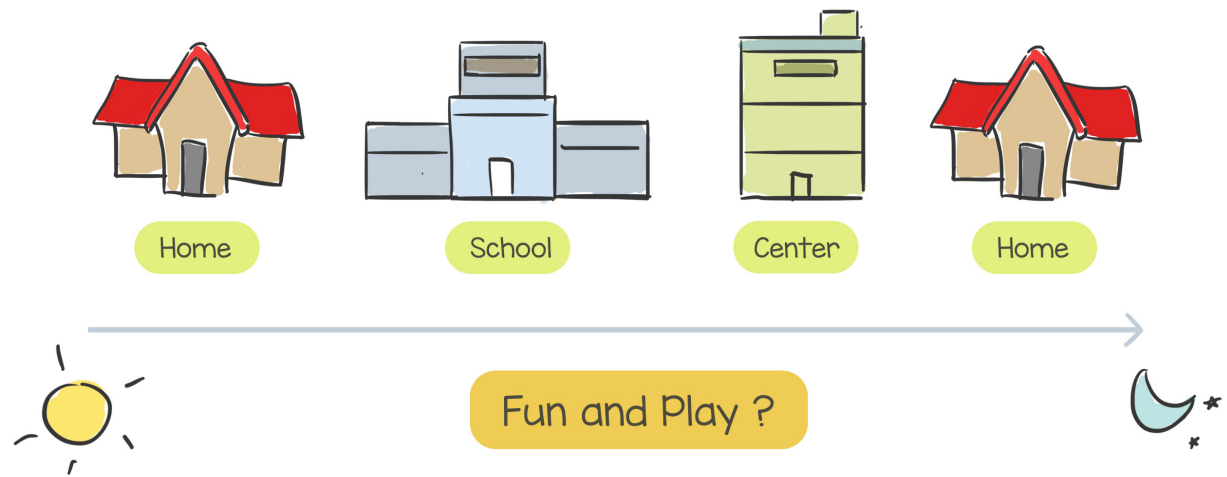
## At special school

Among the three places the kid goes in his daily life, special schools is the only place where he meets people who really understands their problems. The teachers in a special school are trained to teach and deal with a dyslexic kid. They create a special bonding with the kids and make them feel comfortable by motivating them. Motivation is the major factor that drives these kids.

There are many negative factor in a special school, like the kid has to attend the special school after finishing his regular school timing. By this the kid is losing his childhood. The play and fun is missing. Overall in a special school the kid is attended individually and there is not much interaction between other kids.









## **Emotional breakdown and loss of confidence**

By understanding the day today life of a dyslexic kid and also the information gained from secondary research shows that children has more emotional level problem because of their learning disability which in turn affects their personal life and their self-confidence.

For these kids if they have to do a home work or a regular day today work they have to concentrate more and put in more effort to do the work. This makes them loose energy easily and also they get demotivated while seeing the other kids do the same job easily without any effort .

And also on attending schools and special school one after the other they miss their fun time and give their complete free time to learning, finally all these problems leads to frustration and emotional break-down



Dont sit next to me I quit You cannot do it  
**Testimonial** crazy kid  
You are stupid You are Lazy  
I was suicidal



“My school was really big, it had around 1300 kids and during my 6th,7th and 8th grade I got beaten up all the time. Classes were really big and I never got to have a one on one time with my teachers, they didn’t understand me, all my assignments were marked down because I didn’t spell things and write it correctly because of my dysgraphia I didn’t understand the questions because of my dyslexia, I couldn’t pay attention because of my ADHD and I got into lots fight with the teachers as I they didn’t understand what I was trying to tell or what I was going through.”



“You are always wrong, you are always working so hard to keep up. Something is wrong with you and nobody is helping you. These are the things people tell me often and it keeps on repeating in my head. It is like something which u keep on stuffing and one day it is not able to take anymore, and it is a very painful thing.”

Fig. 1 & 2



“In second grade I was diagnosed as dyslexic. And even after that, one day my teacher told me “stop pretending” and I didn’t know what to tell, I asked her stop pretending about what! and she told that I pretend to have a learning disability so that I could get attention.”

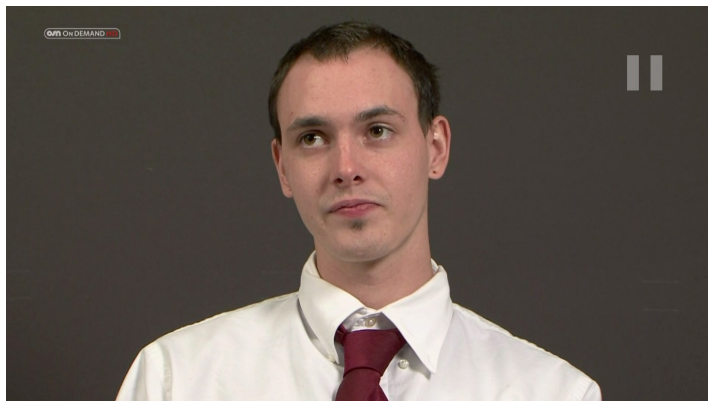


“It’s just really a lonely feeling. Most of the time I feel that nobody understands me. In 6th grade I was suicidal. I was pretty bad, I was admitted to the hospital for three weeks. I gave up altogether and I would stop doing all my work because I was frustrated that I couldn’t express on paper or tests.”

Fig. 3 & 4



“Its hard for something to talk about not really knowing what is the problem with yourself. I really thought that I was stupid, i didn’t realize that there was anything preventing me from understanding and there was something that I was good at so I was able to hide it and compensate, only for a while.”



“I still remember, the teacher said me to go the board and spell out this word. And I was so nervous, I thought I won’t be able to spell it even when I am not being put at the board. And I used to fear going to school every day because I was picked on for everything I do as I was treated as one of the disgrace for the school. I really didn’t like it.”

Fig. 5 & 6



“When I go the library I see a book which I really want to read it, but I just can’t do it. And it really kills me inside. Sometimes all I try is to pick up a book and try to read it and it hurts.”



“I was not afflicted with dyslexia, but I was afflicted by a poorly designed system, that expected me to be something that I am not. And those expectations and my reality did not go together.”

Fig. 7 & 8



I would never read out loud, there is no way. Every word I will be stumbling to get through and it would sound unusual and the teacher will tell me to just stop. Sometimes I would have got through a sentence and others would have gone through three or four paragraphs, and I will be still in that one sentence.



The school was not helping me the way that it should have. They didn't have programs to look after kids like me. So we have to look for two schools. I feel comfortable learning in this special school because everyone is like me and nobody is treating me different. But during the lunch time it is not on the good side as most of the time I cry usually. It is not happy, it sometimes happens and I can't stop it. I cry because of my old school because kids never wanted me to sit next to them.

Fig. 9 & 10



“During my school days I had a locker which I was not able to open it on my own. I ask my friends or strangers every time to open it for me, and I feel terrible about it. Then after some time I stopped using the locker. I cramped everything into my back pack and carry everything with me all the time. I didn’t want embarrass myself, even now I don’t know how to use them.

It’s not just this, I find it very hard or I have to put double or triple times the effort, where I see other kids doing the same job so easily. My self-confidence was broken during my school days”



“In high school I remember social studies teacher asked me what I wanted to do and when I told him that I wanted to become a doctor he kind of laughed at it. He said I would be lucky if I got into a college. But I did get into medical school with my hard work. But it was really hard, the other students would read the material the day before night of the exam but for me I have to read the material before the lecture then listen to the lecture and read it again, take notes. So I have to put more efforts than a normal student did.”

Fig. 11 & 12



Jonathan Mooney is a writer who is dyslexic. He did not learn to read until he was 12 years old. Even though he struggled a lot because of dyslexia, Mooney went on to graduate from Brown University and also he received an honors degree. Mooney is now the foremost leaders in Learning disability/ADHD. He says that he is 30 years old, who reads like a seventh grade kid and spells like a third grade kid.

He says "I was labelled dyslexic and ADHD in my fourth grade and when I was 12 years old I attempted for suicide, by the time I was in 9th grade I was told three things on a daily basis. I was told that I was stupid Kid. I always hear somebody saying that Jonathan you are stupid. I heard that I was crazy bad kid and also lazy. People tell me that if you fix your reading problem you will be normal. I felt that I am normal, why I should fix myself. Then with great determination and support from my family I achieved this level."



Fig. 13 & 14



## Successful people with dyslexic

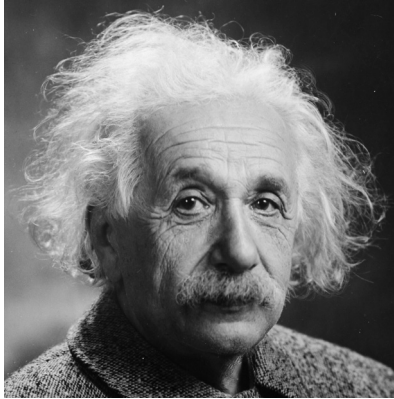
Willard Wigan's artwork has been described by many as "the eighth wonder of the world". His micro-sculptures are now so minute that they can be seen only through a microscope. Each piece generally sit within the eye of a needle, or on the head of a pin. When he is working his heartbeat is slowed, which helps him to control his hand from shaking. Sometimes the vibration caused by the traffic can affect his work, so he often works late night with minimum disturbance. He is a successful artist now. But his childhood was not so nice.



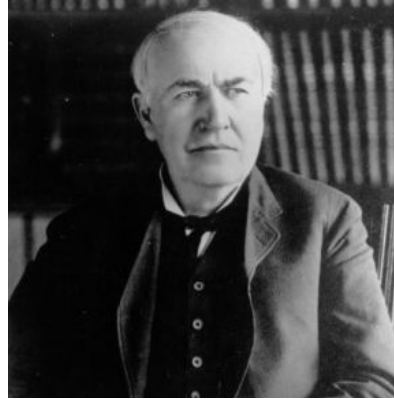
Fig. 15, 16 & 17

He says "I still remember my first day at school. The teacher called me and introduced me as the new student and she gave me a chalk and asked me to write my name on the board. I went to the board and drew a picture of a guy. Because I was not used to write. All the kids in the class started laughing. And my teacher told "Children here we have an exhibition of failure, he is failure. This is what not become" I felt terribly bad. She complete destroyed my self-confidence.

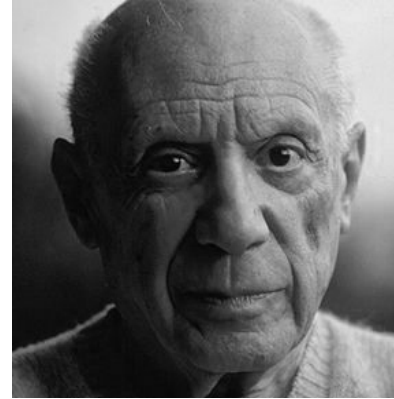
One day I saw a microscope on the table and asked madam can I ask a question? And she said you don't need to know because your brain doesn't have the capacity, and she carried on with her work. I saw the microscope on the table and realized that it has my name written on it. So I decided to take it. The next day teacher came and asked each student did you take the microscope, did you. When she came to me she said I know you wouldn't have because you don't have the brain for microscope. And with that microscope I become what I am today. I continued to create smaller and smaller sculpture."



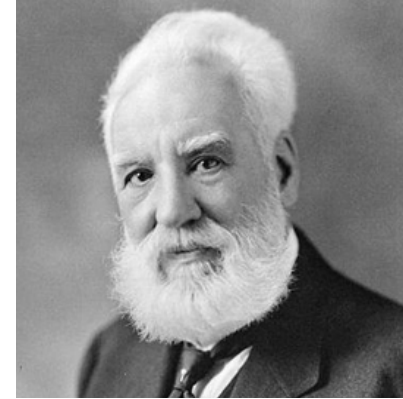
Albert Einstein



Thomas Edison



Pablo Picasso



Alexander Graham Bell



Leonardo Da Vinci



Walt Disney



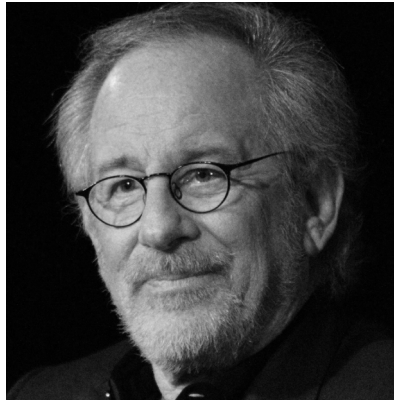
Jim Carrey



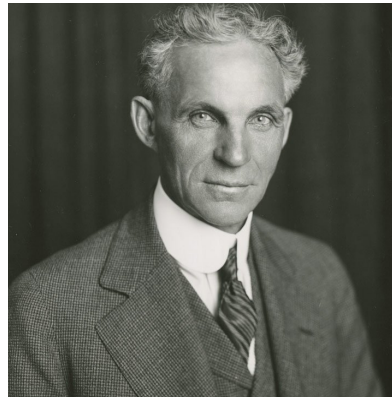
Winston Churchill

*Fig. 18 - 25*

## More successful people with dyslexic



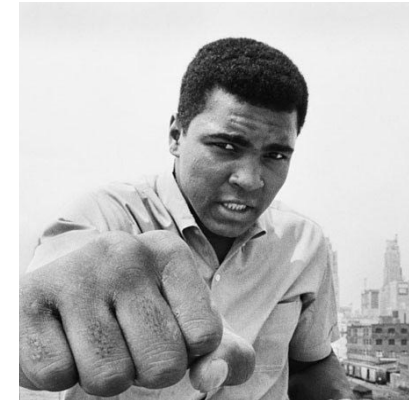
Steven Spielberg



Henry Ford



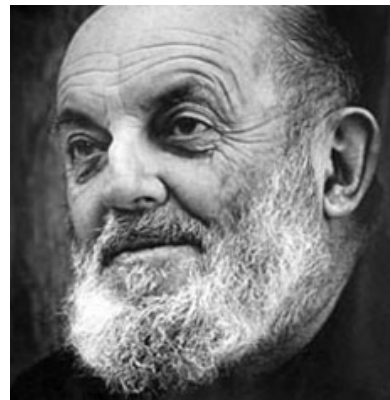
John Kennedy



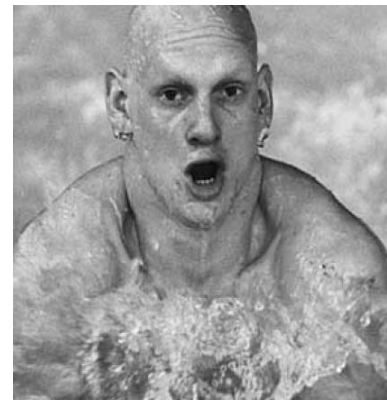
Muhammad Ali



Tom Cruise



Ansel Adams



Duncan Goodhew



Ingvar Kamrad

*Fig. 26 - 33*

*Emotions of a dyslexic*

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**Figure 31** <http://www.anseladams.com/ansel-adams-information/>

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EVERYBODY IS A GENIUS.  
BUT IF YOU JUDGE A FISH BY ITS ABILITY TO  
CLIMB A TREE, IT WILL LIVE ITS WHOLE LIFE  
BELIEVING THAT IT IS STUPID

— ALBERT EINSTEIN,  
( A DYSLEXIC )

Industrial Design Centre  
Indian Institute of Technology Bombay