



**“She comes to me
crying and wanting
to know why
she is so stupid.”**

DYSGRAPHIA

- Sandra Stark



1 the pie wees all fraught, as if
2 they were thinking hard. 3 My Dure
4 had found that she looked as if
5 she were thinking 6 ~~at~~ very hard bid
7 do but her hand up, she bid 8 in
9
10 Celled on.



I. What is DYSGRAPHIA?

Dysgraphia is a neurological (brain-based) and often hereditary transcription disability, meaning that it is a writing disorder associated with impaired handwriting, orthographic coding, and finger sequencing (the movement of muscles required to write).



Copy Work

1-31-13

- ① An encyclopedia is a book or a set of books giving information, arranged alphabetically on all branches of knowledge.

Leroy Brown's head was like an encyclopedia. It was filled with facts he had learned from books. He was like a complete library walking around in sneakers.

themommaknows.com



- Impaired handwriting can interfere with learning to spell words in writing and speed of writing text.
- Children with dysgraphia may have only impaired handwriting, only impaired spelling (without reading problems), or both impaired handwriting and impaired spelling.



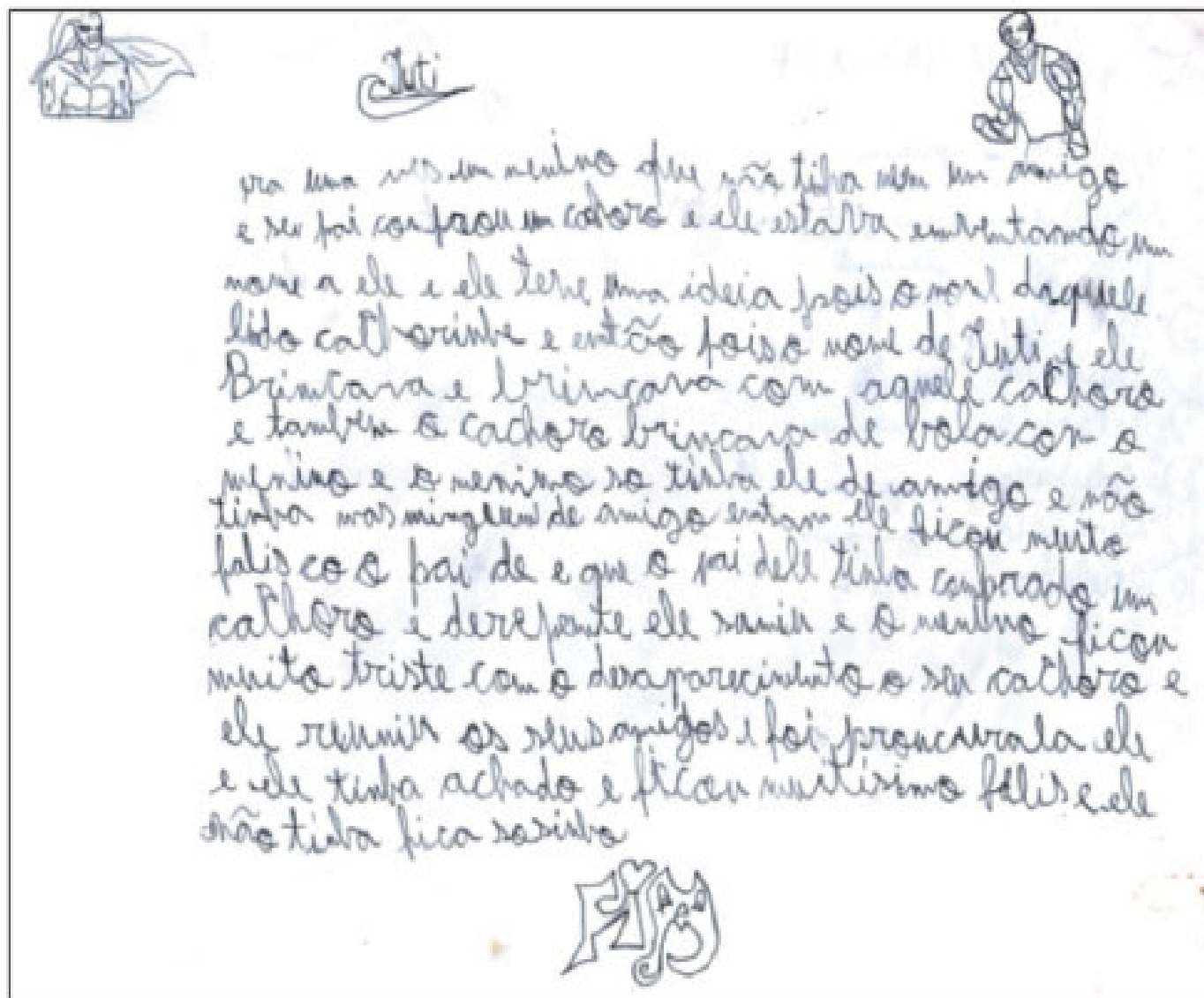


Figure 2 Sample showing text with dysgraphic and dysorthographic characteristics.



- ***Dysgraphia*** is a Greek word. The base word *graph* refers both to the hand's function in writing and to the letters formed by the hand.
- The prefix *dys* indicates that there is impairment.
- *Graph* (γραφία) refers to producing letter forms by hand.
- The suffix *ia* refers to having a condition.
- Thus, *dysgraphia* is the condition of impaired letter writing by hand, that is, primarily disabled handwriting, but also coherence.



W.J. 3-4-62

I love you and Miss you
+ Julia Ann / ~~has~~ is Julia Ann
long. I sure miss her
It lives me out o

Were you able to get
Hold of that bell at apvra.
about chair and bed

Yeah How bad I have to go
to the Ballahroom
and to Bob My teeth are floating



- **There's no cure or easy fix for dysgraphia, although there are strategies and therapies that can help a child improve his writing.**
- **This will help him thrive in school and anywhere else expressing himself in writing is important.**



I am glad I'm 6
and I know how to
ride my 2 wheeler
bike. I love to
have my sister.
She lets me have
her old stuff like
her dolls.

ANNA AGE 6



Stages in the act of Writing

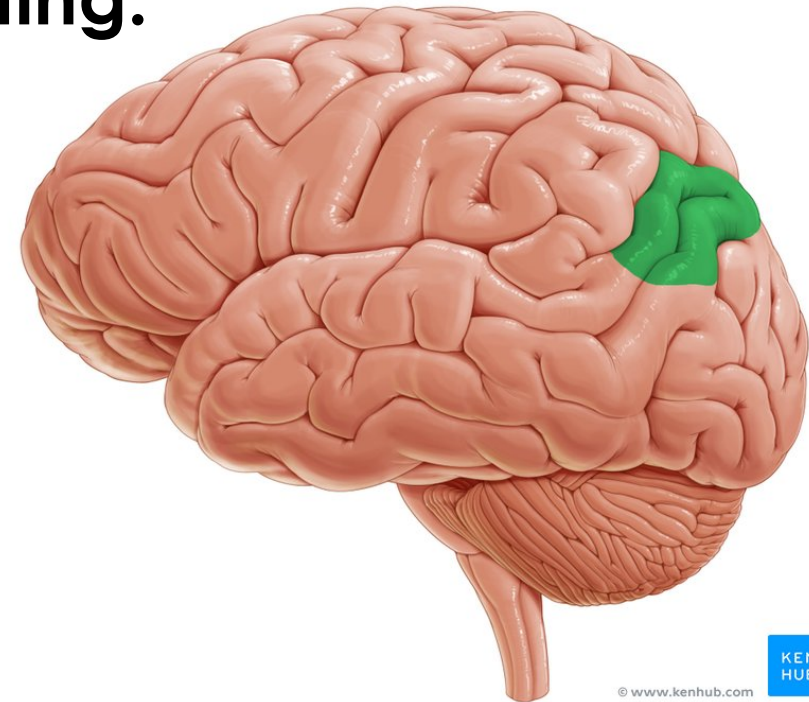
There are at least two stages in the act of writing:

1. The **linguistic stage** and
2. The **motor-expressive-praxic stage**



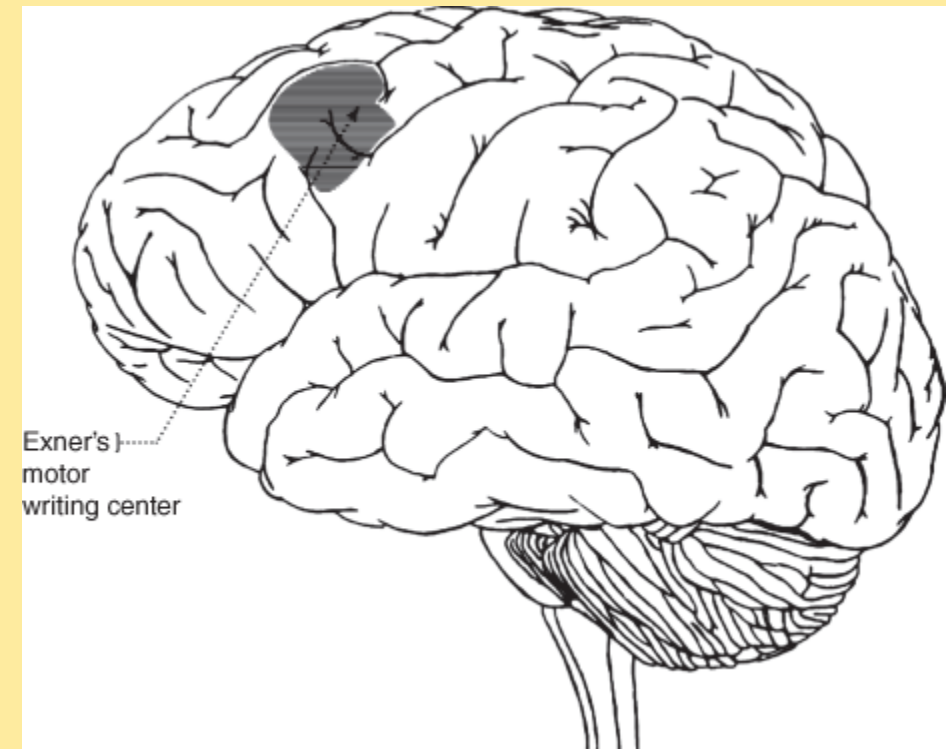
LINGUISTIC STAGE

- The linguistic stage involves the encoding of auditory and visual information into symbols for letters and written words.
- This is mediated through the angular gyrus, which provides the linguistic rules which guide writing.



MOTOR STAGE

- The motor stage is where the expression of written words or graphemes is articulated.
- This stage is mediated by Exner's writing area of the frontal lobe.



- People with dysgraphia can often write on some level and they may experience difficulty with other fine motor skills, such as tying shoes.
- However, dysgraphia does not affect all fine motor skills.



- People with dysgraphia often have unusual difficulty with handwriting and spelling which in turn can cause **writing fatigue**.
- They may lack **basic grammar and spelling skills** (for example, having difficulties with the letters p, q, b, and d), and often will write the wrong word when trying to formulate their thoughts on paper.



- **The disorder generally emerges when the child is first introduced to writing.**
- **Adults, teenagers, and children alike are all subject to dysgraphia.**



- For many children with dysgraphia, just holding a pencil and organizing letters on a line is difficult.
- Their handwriting tends to be **messy**.



Hi (or) Confidential! My name is
[redacted] & this is my best handwriting. Watch
how it changes as I keep writing.
I've started to feel the pain in
my hand now. This is probably because
of the whole neurological/psychic
thing. This is my favorite
pen because it hurts less
than others & my handwriting
is much better with it.
When my handwriting is at
its worst which is about
twice as bad as this,
I can't even read myself.
As you might imagine
I make a ton of mistakes
at school.
The pain is intense
now but I am losing the
fine motor control which
little I have anyway.
This is what my handwriting
will look like when
I'm not allowed to
type.



- **Many struggle with spelling and putting thoughts on paper.**
- **These and other writing tasks—like putting ideas into language that is organized, stored and then retrieved from memory—may all add to struggles with written expression.**



- It is important to understand that slow or sloppy writing isn't necessarily a sign that your child is not trying hard enough.
- Writing requires a **complex set of fine motor and language processing skills.**



- For kids with dysgraphia, the writing process is **harder and slower**.
- For these students letter formation is a **cognitive task** which leaves little mental capacity to devote to spelling, grammar, sentence structure, and other areas of written language.
- Without help, a child with dysgraphia may have a difficult time in school.

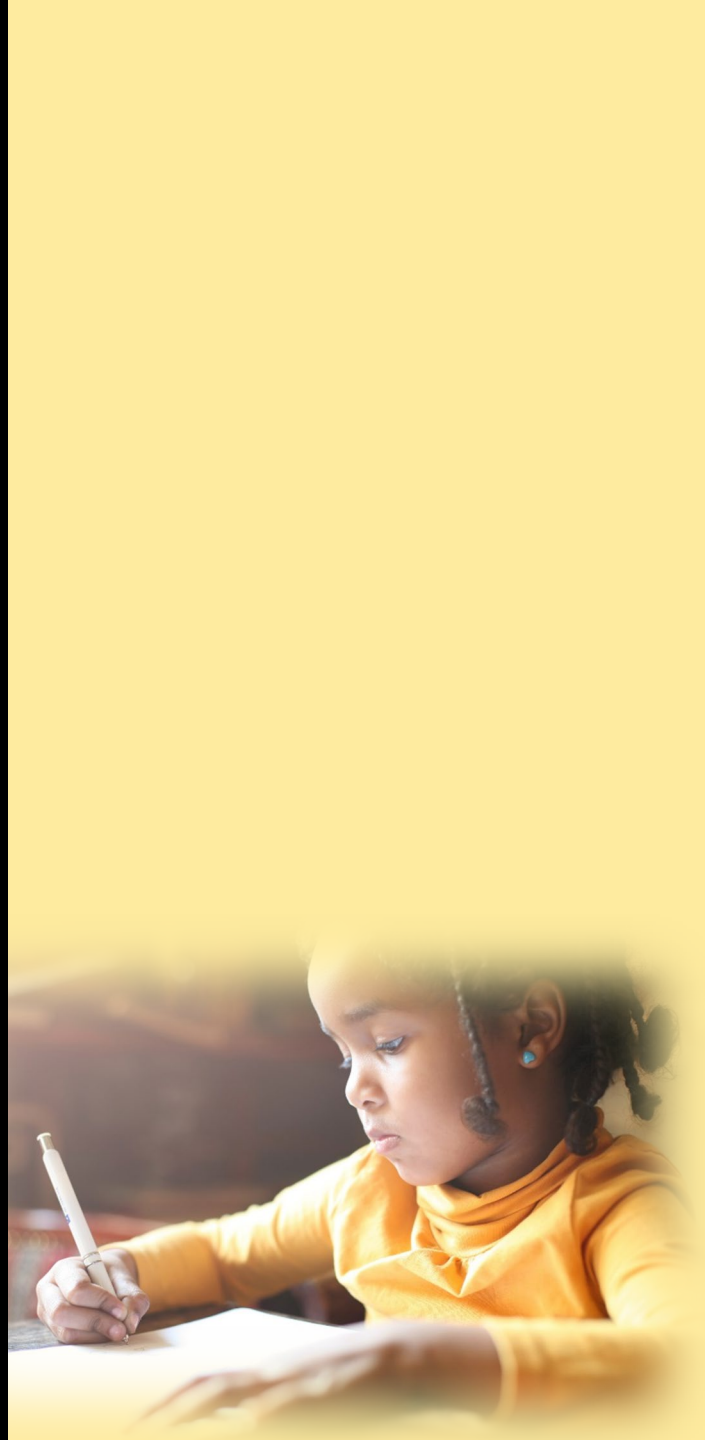


- Different professionals may use different terms to describe a child's struggle with written expression.
- The *Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5)* doesn't use the term dysgraphia as before in the DSM-4 but uses the phrase 'an impairment in written expression' under the category of 'specific learning disorder'.
- *Dysgraphia* is the term used by most professionals.



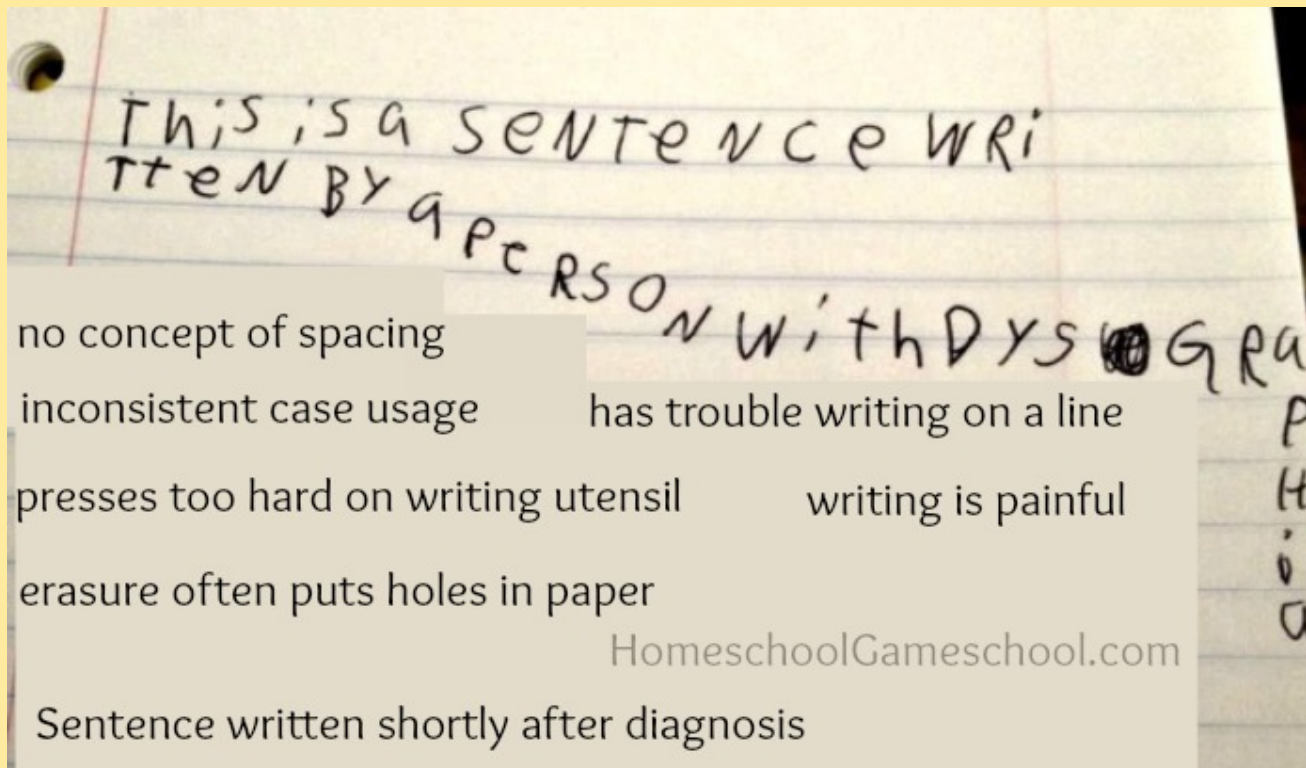
- *Dysgraphia* should be distinguished from **agraphia**, which is an acquired *loss* of the ability to write resulting from brain injury, stroke, or progressive illness.





II. How common is dysgraphia?

Dysgraphia is not a familiar term, but the signs are very common.



- It's estimated that 5 to 20 percent of all children have some type of writing deficit like dysgraphia.¹
- Symptoms of dysgraphia are not uncommon in young children who are starting to learn how to write.
- If a child continues to struggle with writing despite plenty of practise and corrective feedback, it is important to take a closer look to see whether dysgraphia is an underlying cause.



¹ Reynolds, C. (2007). Encyclopaedia of special education: A reference for the education of children, adolescents, and adults with disabilities and other exceptional individuals (3rd ed.). New York: John Wiley & Sons.

- **Children with dysgraphia have problems producing writing, but their intelligence is normal.**
- **Many bright children with dysgraphia are unable to keep up with the written work required by classes that are the most appropriate for them intellectually.**



- **All too often they are placed in classes requiring written work at the level of their ability to produce writing, rather than given the accommodations needed to be in classes that interest and engage them.**



III. WHAT CAUSES DYSGRAPHIA?

- Writing is a **complex process**.
- It involves **working memory** and shifting among tasks that include generating ideas, thinking of words and word meaning, organizing good sentences, planning, and self-monitoring—all **executive functions**.



- Difficulty in any of the **basic language or motor skills** or in the executive functions needed to combine them end with the same result: problems with written expression.
- In addition, difficulty **controlling fine motor skills**, sequencing the hand movements needed to write, or controlling spatial accuracy can cause non-language based dysgraphia.



- Thus research to date has shown **orthographic coding in working memory is related** to handwriting and is often impaired in dysgraphia.
- The brain takes in information through the senses and stores it to use later.
- Before a person starts writing, he retrieves information from his short- or long-term memory and gets organized to begin writing.



In a person with dysgraphia, researchers believe one or both of the next steps in the writing process go off track:

1. Orthographic coding refers to the ability to store written words in working memory while the letters in the word are analyzed or the ability to create permanent memory of written words linked to their pronunciation and meaning.



2. Children with dysgraphia do not have primary developmental motor disorder, another cause of poor handwriting, but may have difficulty planning sequential finger movements such as the touching of the thumb to successive fingers on the same hand without visual feedback.



- **Children with dysgraphia may have difficulty with both orthographic coding and planning sequential finger movements.**
- **This results in a written product that's hard to read and filled with errors.**
- **And most important, it does not convey what the child knows and what he intended to write.**



- **There may also be a genetic link, with dysgraphia running in families.**
- **Dysgraphia is a biologically based disorder with genetic and brain bases.**
- **More specifically, it is a working memory problem.**
- **In dysgraphia, individuals fail to develop normal connections among different brain regions needed for writing.**



What skills are affected by dysgraphia?

Academic

Fall behind in schoolwork (it takes them so much longer to write).

- Taking notes is a challenge
- They may avoid writing assignments.

Basic life skills

fine motor skills may be weak (hard to do everyday tasks)

- buttoning shirts
- making a simple list.

Social-emotional

- may feel frustrated about their academic and life challenges.
- If not identified: they may be criticized as sloppy or lazy (causing stress).



Copy Work

1-31-13

- ① An encyclopedia is a book or a set of books giving information, arranged alphabetically on all branches of knowledge.

Leroy Brown's head was like an encyclopedia. It was filled with facts he had learned from books. He was like a complete library walking around in sneakers.

themommaknows.com



VI. TYPES of DYSGRAPHIA

DYSLEXIC DYSGRAPHIA

- A person with dyslexic dysgraphia (also known as processing dysgraphia) can copy text, color and draw close to normal.
- However, spelling words out loud (oral spelling) is below age level and written text is illegible (unreadable).
- This type of dysgraphia is caused by issues with the orthographic loop.



DYSGRAPHIA EXAMPLE BY A DYSLEXIC STUDENT - Grade 4

When Mole got home, she went
to room to sink. she got out her pens/
and paper and sat at her desk.



MOTOR DYSGRAPHIA

- A person with motor dysgraphia can color, draw and paint within normal boundaries but has trouble with all written work, including copied work.
- They may also have trouble with other fine motor skills like opening water bottles, manipulating pencils, or tying shoes.

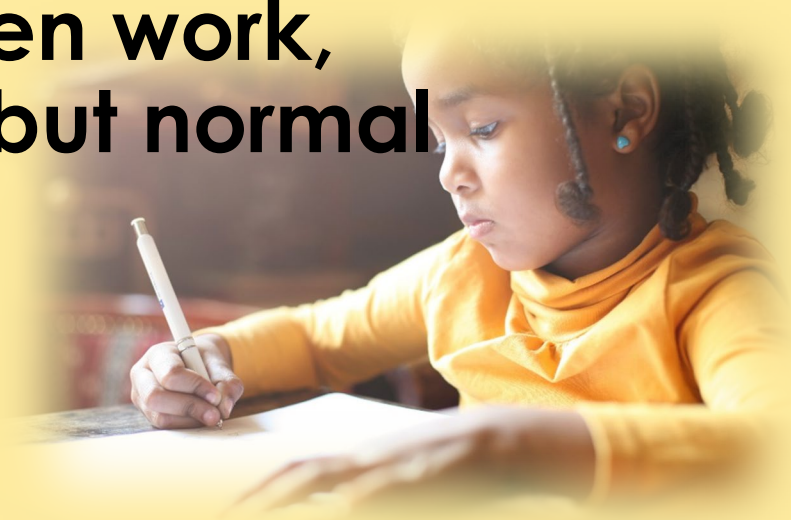


and I am of 10 years
X I L I C P H o o t
b o l I s p
h o l s e and
l i c e t o o b e
b o l P o o p



SPATIAL DYSGRAPHIA

- Drawing, coloring and painting are always below normal expectancies in spatial dysgraphia.
- Handwriting is illegible with unevenly spaced and sized letters.
- Dysgraphia due to a defect in the understanding of space has illegible spontaneously written work, illegible copied work, normal spelling, but normal tapping speed.



EST 7 H25. ROBERT BOIT SON CAFÉ. IL MET
SA VESTE ET SE REND AU PARKING DE L'IMMEUBLE
UNE FIAUVASE SURPRISE L'ATTEND: SON
PNEU AVANT GAUCHE EST CREVÉ... IL CHASSE
DE ROUE ET ROLLE VERS LA PORTE
D'ON LEAMS



- It is important to identify the type of dysgraphia in order to plan the therapy program for remediation.
- However, some children may have a combination of any two or all three of these.



V. The Symptoms of Dysgraphia

The symptoms of dysgraphia fall into six categories: visual-spatial, fine motor, language processing, spelling/handwriting, grammar, and organization of language.

A child may have dysgraphia if his writing skills lag behind those of his peers and he has at least some of these symptoms:



W.J. 3-4-62

I love you and Miss you
+ Julia Ann / ~~has~~ is Julia Ann
long. I sure miss her
It lives me out o

were you able to get
Hold of that bell at apwva.
about chair and bed

Yeah How bad I have to go
to the Ballahroom
and to Bob My teeth are floating



1. Visual-Spatial Difficulties

- **Has trouble with shape-discrimination and letter spacing**
- **Has trouble organizing words on the page from left to right**
- **Writes letters that go in all directions, and letters and words that run together on the page**
- **Has a hard time writing on a line and inside margins**
- **Has trouble reading maps, drawing or reproducing a shape**
- **Copies text slowly**



2. Fine Motor Difficulties

- **Has trouble holding a pencil correctly, tracing, cutting food, tying shoes, doing puzzles, texting and keyboarding**
- **Is unable to use scissors well or to color inside the lines**
- **Holds his wrist, arm, body or paper in an awkward position when writing**



3. Language Processing Issues

- Has trouble getting ideas down on paper quickly
- Has trouble understanding the rules of games
- Has a hard time following directions
- Loses his train of thought



4. Spelling Issues/Handwriting Issues

- **Has a hard time understanding spelling rules**
- **Has trouble telling if a word is misspelled**
- **Can spell correctly orally but makes spelling errors in writing**
- **Spells words incorrectly and in many different ways**
- **Has trouble using spell-check—and when he does, he doesn't recognize the correct word**



- **Mixes upper- and lowercase letters**
- **Blends printing and cursive**
- **Has trouble reading his own writing**
- **Avoids writing**
- **Gets a tired or cramped handed when he writes**
- **Erases a lot**



5. Grammar and Usage Problems

- **Doesn't know how to use punctuation**
- **Overuses commas and mixes up verb tenses**
- **Doesn't start sentences with a capital letter**
- **Doesn't write in complete sentences but writes in a list format**
- **Writes sentences that “run on forever”**



6. Organization of Written Language

- Has trouble telling a story and may start in the middle
- Leaves out important facts and details, or provides too much information
- Assumes others know what he's talking about



- **Uses vague descriptions**
- **Writes jumbled sentences**
- **Never gets to the point, or makes the same point over and over**
- **Is better at conveying ideas when speaking**



- **The symptoms of dysgraphia also vary depending on a child's age.**



VI. SIGNS of DYSGRAPHIA

- **Preschool children** may be hesitant to write and draw and say that they hate colouring.



- **School-age children** may have illegible handwriting that can be a mix of cursive and print.
- They may have trouble writing on a line and may print letters that are uneven in size and height.
- Some children also may need to say words out loud when writing or have trouble putting their thoughts on paper.



- **Teenagers** may write in simple sentences.
- Their writing may have many more grammatical mistakes than the writing of other kids their age.



WHAT ARE WARNING SIGNS OF DYSGRAPHIA?

Students with Dysgraphia may exhibit the following:

- Illegible handwriting
- Saying words out loud while writing
- Trouble forming letter shapes
- Trouble keeping track of thoughts already written down
- Difficulty with syntax structure and grammar



VII. Skills affected by Dysgraphia

- The impact of dysgraphia on a child's development varies, depending on the symptoms and their severity. Here are some common areas of struggle for kids with dysgraphia:
- **Academic:**
- Kids with dysgraphia can fall behind in schoolwork because it takes them so much longer to write. Taking notes is a challenge.
- They may get discouraged and avoid writing assignments.



- **Basic life skills:**
- **Some children's fine motor skills are weak. They find it hard to do everyday tasks, such as buttoning shirts and making a simple list.**



- **Social-emotional:**
- Children with dysgraphia may feel frustrated or anxious about their academic and life challenges.
- If they haven't been identified, teachers may criticize them for being 'lazy' or 'sloppy'.
- This may add to their stress.
- Their low self-esteem, frustration and communication problems can also make it hard to socialize with other children.

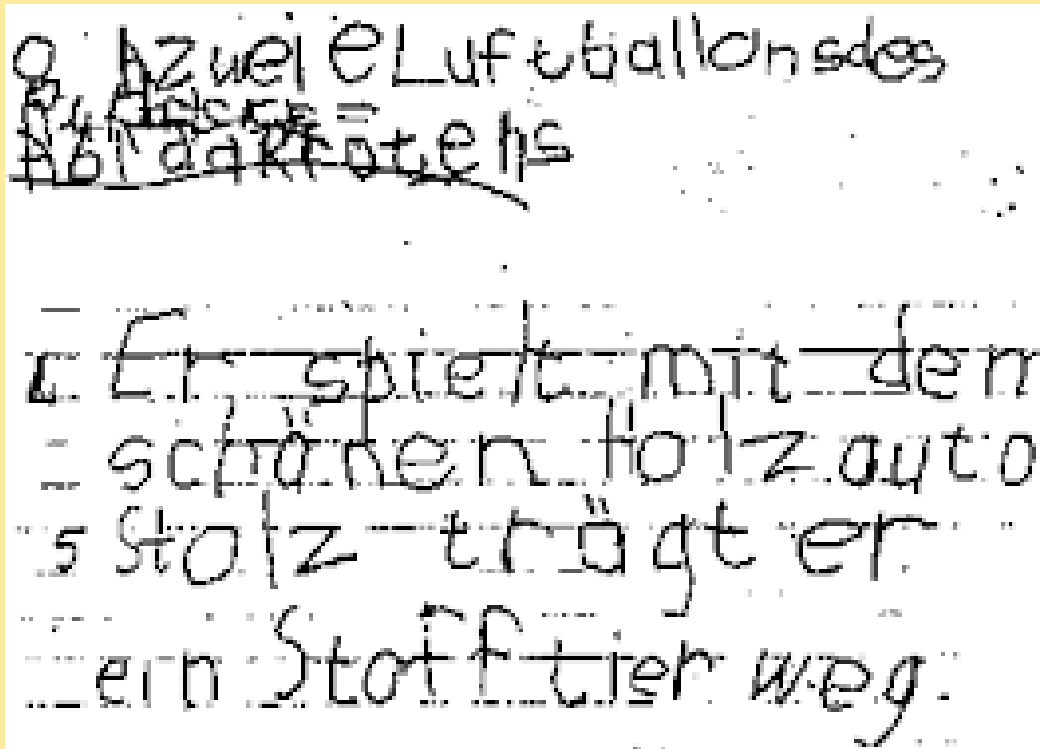


- While dysgraphia is a lifelong condition, there are many proven strategies and tools that can help children with dysgraphia improve their writing skills.



VIII. Strategies to Achieve Success

- Initially, children with impaired handwriting benefit from activities that support *learning to form letters*.



Early Writers

- Playing with clay to strengthen hand muscles
- Use multi-sensory techniques (e.g. sand trays) to form legible letters
- Keeping lines within mazes to develop motor control
- Connecting dots or dashes to create complete letter forms



- **Tracing letters with index finger or eraser end of pencil**
- **Imitating the teacher modelling sequential strokes in letter formation**
- **Copying letters from models**
- **Use paper with raised lines for sensory guide**
- **Try different pens and pencils, as well as pencil grips to find the most comfortable**



Subsequently, once children learn to form legible letters, they benefit from instruction that helps them develop *automatic letter writing*, using the following steps to practice each of the 26 letters of the alphabet in a different order daily:



- **Schedule handwriting instruction in the daily program to develop automatic letter writing**
- **Studying numbered arrow cues that provide a consistent plan for letter formation**
- **Covering the letter with a 3 x 5 card and imaging the letter in the mind's eye**



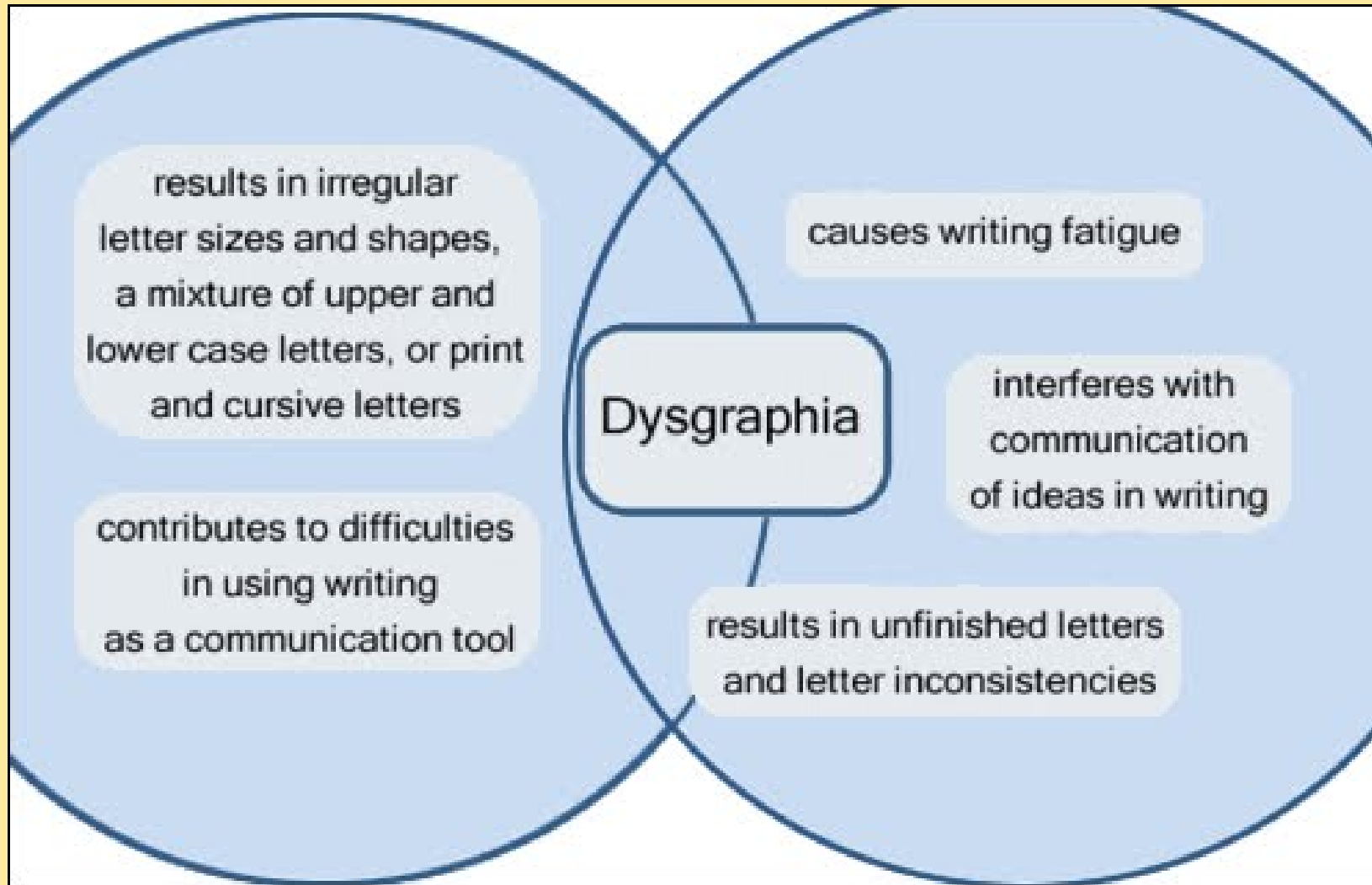
- **Writing the letter from memory after interval that increases in duration over the handwriting lessons**
- **Writing letters from dictation (spoken name to letter form)**



Young Writers

- **Students benefit from explicit instruction in spelling throughout grades 1 -12**
- **Coordinate the phonological, orthographic, and morphological processes relevant for the spelling of longer, more complex, less frequent words**
- **Teach writing at all grade levels of the most common and important words used for the different academic domains of the curriculum**





- **Begin writing assignments creatively with drawing or speaking ideas into a tape recorder**
- **Do not judge timed assignments on neatness or spelling**
- **Use large graph paper for math calculation**
- **Have students proofread work after a delay**



- **Reduce amount of copying**
- **Complete tasks in small steps**
- **Allow extra time**
- **Allow use of print or cursive**
- **Encourage the use of abbreviations for in-class writing**
- **Students benefit from strategies for composing by planning, generating, reviewing/evaluating, and revising**



- **compositions of different genre including narrative, informational, compare and contrast, and persuasive**
- **self-regulation strategies for managing the complex executive functions involved in composing**
- **Introduce a word processor on a computer**



Teens and Adults

- Provide recorders to supplement note taking and to prepare for writing assignments
- Create a step-by step plan by breaking writing assignments into small tasks
- Organize writing projects through creating a list of keywords that will be useful



- **Provide clear, constructive feedback with regards to quality of work, strengths and weaknesses of the writing project**
- **Use assistive technology, i.e. computers, netbooks, Franklin Spellers, Recording Pens, Text-to-Speech programmes etc.**

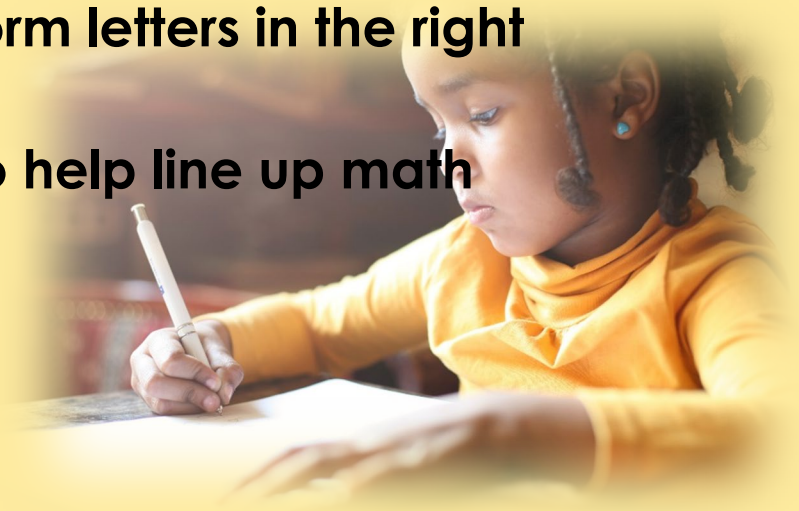


IX. Classroom Accommodations to Help the Child with Dysgraphia



Classroom Materials and Routines

- **Provide pencil grips or different types of pens or pencils to see what works best for the student.**
- **Provide handouts so there is less to copy from the board.**
- **Provide typed copies of classroom notes or lesson outlines to help the student take notes.**
- **Provide extra time to take notes and copy material.**
- **Allow the student to use an audio recorder or a laptop in class.**
- **Provide paper with different-colored or raised lines to help form letters in the right space.**
- **Provide graph paper (or lined paper to be used sideways) to help line up math problems.**



Giving Instructions

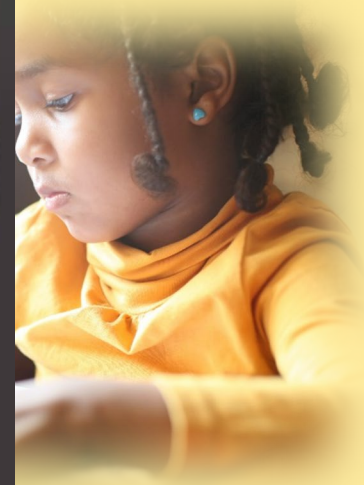
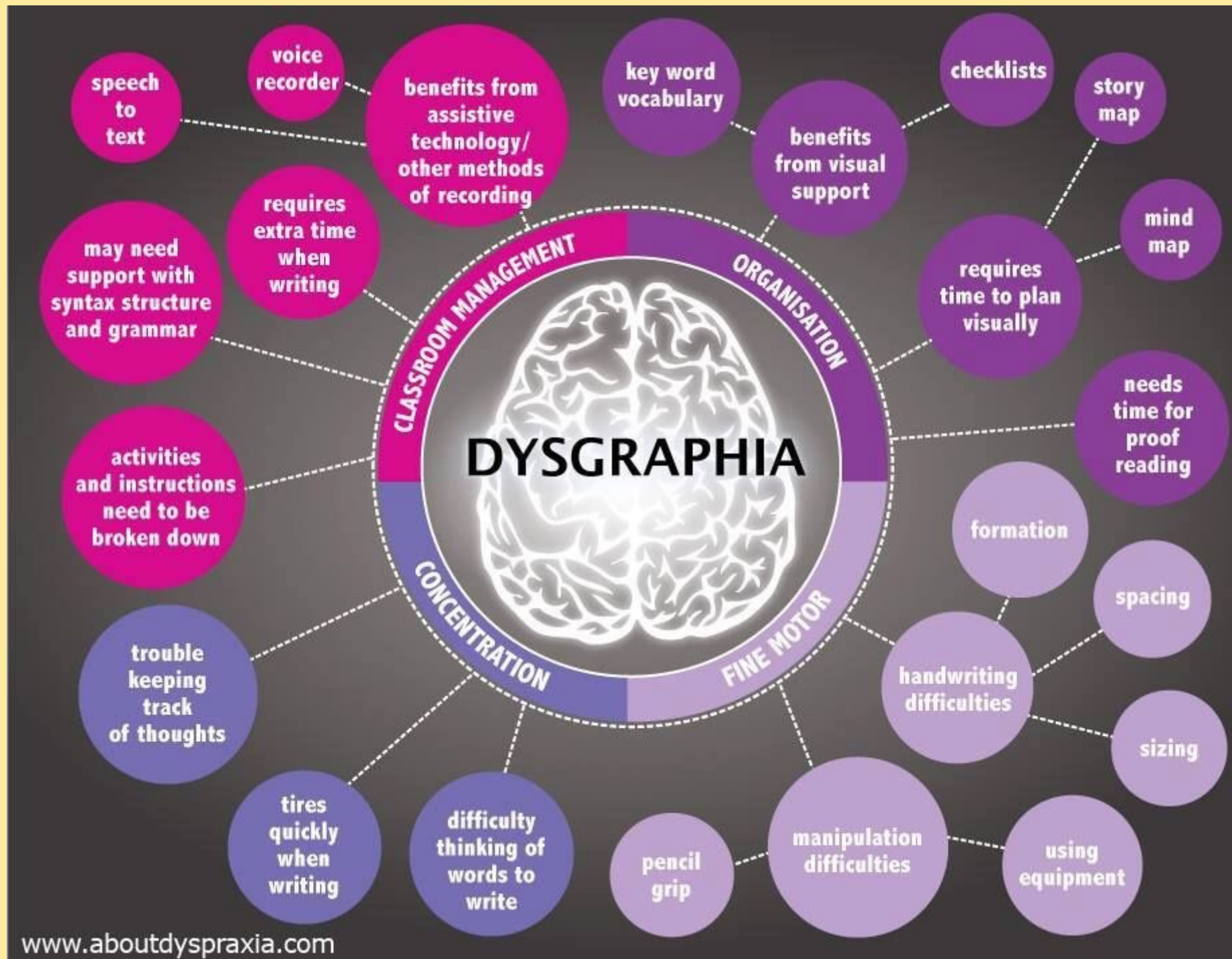
- Provide paper assignments with name, date, title, etc., already filled in.
- Provide information needed to start writing assignments early.
- Help the student **break writing assignments into steps**.
- Provide a rubric and explain how each step is graded.
- Give examples of finished assignments.
- Offer alternatives to written responses, like giving an oral report



Completing Tests and Assignments

- Adapt test formats to cut down on handwriting. For example, use “circle the answer” or “fill in the blank” questions.
- Grade based on what the student knows, not on handwriting or spelling.
- Use a scribe or speech-to-text so the student can dictate test answers and writing assignments.
- Let the student choose to either print or use cursive for handwritten responses.
- Allow a “proof reader” to look for errors.
- Provide extended time on tests.
- Provide a quiet room for tests if needed.





X. FINAL THOUGHTS

- **Determine if lack of handwriting instruction is cause of student's handwriting problem.**
- **Although early diagnosis and intervention is the goal, it is never too late to intervene to improve a student's deficient skills and provide appropriate interventions.**
- **Students with dysgraphia often have other diagnosis like dyslexia and ADHD.**
- **Be patient and positive, encourage practice, and praise the effort put forth.**

