

PREMIUM ISSUE EIGHTY-THREE NOVEMBER 2022

# Dyslexic Advantage

## PREMIUM MAGAZINE



ON EDUCATION with  
Dr JOHN LIENHARD IV

- KEEPING UP WITH WILSON
- NEW WAYS TO HACK LEARNING
- PARENT TEACHER CONFERENCES
- DYSLEXIA & AUDITORY PROCESSING
- MATH GAMES AND MORE



**Dyslexic Advantage** is a 501(c)3 non-profit organization and one of the world's largest online communities for dyslexia.

Our mission is to transform the way dyslexic people are understood, educated, and employed by identifying and using strengths that are the core features of the Dyslexic Mind.

Thanks for supporting the Dyslexic Advantage community!

We hope you're off to a good start to your school year. Highlights in this issue include a wonderful chat with Dr John Lienhard, Auditory Processing, and some new helpful apps for students and academics.

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Thanks to the outstanding editorial team: Trish Seres, Shelley Wear, Cheryl Kahn, Jack Martin, Lady Grace Belarmino, and Michelle Williams.

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## ON EDUCATION with DR JOHN LIENHARD IV



**"I couldn't read and write, could barely scrape through school..."**

- Dr John Lienhard IV, emeritus mechanical engineering professor, founder of [Engines of Our Ingenuity](#)

Recently, I had an opportunity to talk with a remarkable polymath (he prefers the word gadfly), John Lienhard IV, an emeritus professor of mechanical engineering.

I had come across his podcast episode, [Risk and Vocation](#), where he had said:

**"We dyslexics make fine engineers and inventors. We do fine in art, computers, theater. Why push your students into the standard prestige programs? They're the people who'll shape the material world we live in."**

**Also, "Real influence flows to people who leave the beaten paths and whose hands touch the material world."**

If you'd like to hear my full interview with John, sign into your premium account and check out my interview on our [Premium Podcast](#) page under "Inspirational People."

Although John struggled significantly in his early school years, he found enjoyable activities outside of school like making model airplanes and being in the outdoors. His mother was a "not a realist" and assumed that he was smart despite his school performance. His mother was an accomplished pianist and singer and there were many high achievers in her family. She "wouldn't have it otherwise." His father had a wide range of careers including an Army pilot, a journalist, and a surveyor.

**"I simply gave up on school -- just gave up. And I built model airplanes. And I got very good at it... Gas powered engines... and working with my hands and making these things and oh, it felt good. There was beauty. There was kinesthetic beauty and so that's what I did."**

What may have also added to the pressure of school was that he was skipped one year because of a high IQ score from a test in kindergarten, but John was also an August baby, so that made him young for his grade - so teachers struggled knowing what to do with him - and he still couldn't read or write.

Math was also difficult for him. Together, these challenges would seem to be three strikes against what many assume are the building blocks of education. Regardless, he was eventually able to find out what worked for him. Although his educational progress had a somewhat stuttering course until he found out what worked for him, learning and succeeding became easier once he got the "bit between his teeth" and was determined to accomplish what he set out to do.



**"Don't find out what you're good at. Find out what you're able to do and then do it."**

When John was in high school and "doing badly", he got a job at a roadhouse as a dishwasher. When he found out that he was good as a dishwasher, it made him stop and realize he could be good at a job.

Some of his breakthroughs happened with self-realizations or with educational settings that gave him time to develop his work-arounds.

**"I went to Multnomah Junior College and it saved my life...I figured out that if I just put my head down and ground I could get through and find my workaround."**

## INSPIRATION

John had struggled through high school math classes and failed algebra. On a retake, he was able to get a C in his senior year, but he found what he excelled at - drafting.

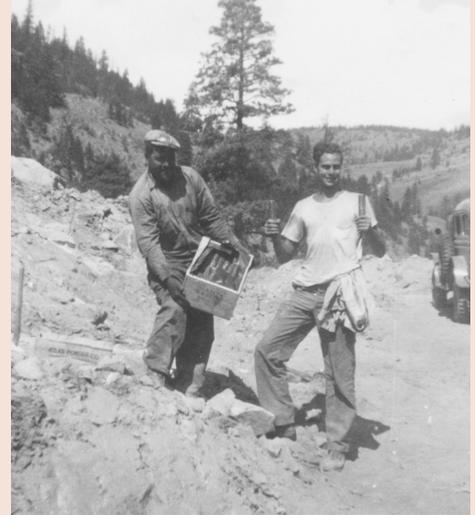
When he enrolled in Multnomah, he was told that he could take all the draftsmen classes as a pre-engineering major, so that is what he became.

John took advanced algebra along with remedial geometry in college. He struggled with algebra again, but passed them both. Calculus was beautiful because it involved spatial manipulation of ideas. He also recalled having the good fortune of being assigned a textbook also using a spatial approach. Suddenly he was an A student.

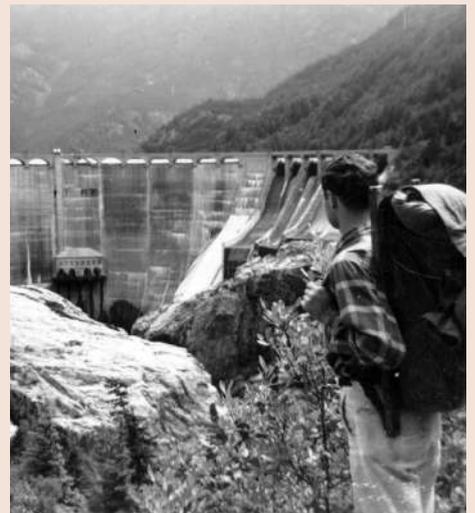
John finished his degree and went on to Oregon State College where he went "right back to the bottom again." In fact, at the end of his first semester, he ran into one of his instructors who advised him to "Join the Army" because he was "never going to be an engineer."

That advice ended up having an opposite effect because he became even more motivated to succeed. After working at Boeing and earning his Masters, he was drafted into the Army, then attended Berkeley to get his PhD ("same old story, I started out as a C student, then ended up with A's"). He became a junior faculty member then and began teaching some of his own courses.

When I asked John what his area of scientific expertise was, he said it was in the "thermodynamic aspects of heat transfer." When I asked what the practical applications of this would be, he said "heat removal from something that generates a lot of energy, like a nuclear core."



John working on a road crew.



Hiking past Diablo Dam.

What his work consisted of was a mixture of experimental and theoretical work. He would first observe something, then try to create physical and mathematical descriptions of what he was seeing.

To carry out his experiments, he often needed to make things to do the work he wanted to do.

And often, John learned by doing rather than going through a conventional route of being a student.

He performed opera although he never took a course in music. He had a faculty position in history although he had never taken a history course. He built a radio set though he didn't have a background in radio.

### **"I hate the process of being a student."**

The way he finally conquered Berkeley to get his PhD was to go to lectures, scribble some notes, then later rewrite his notes, imagining that he was giving the lecture. Years later, he would adapt these notes to be used in classrooms.

I think there may be more dyslexic people who learn better this way than we realize.

Learning by this approach meant that John really had to know what was going on - what information really meant and how information was related...and then he had to be able to communicate it in his own way.

Information is not to be memorized and spit back but rather to be thoroughly understood and applied. To enjoy all the pearls of his advice, check download and listen to his full [interview](#).



John and his perpetual motion machine.

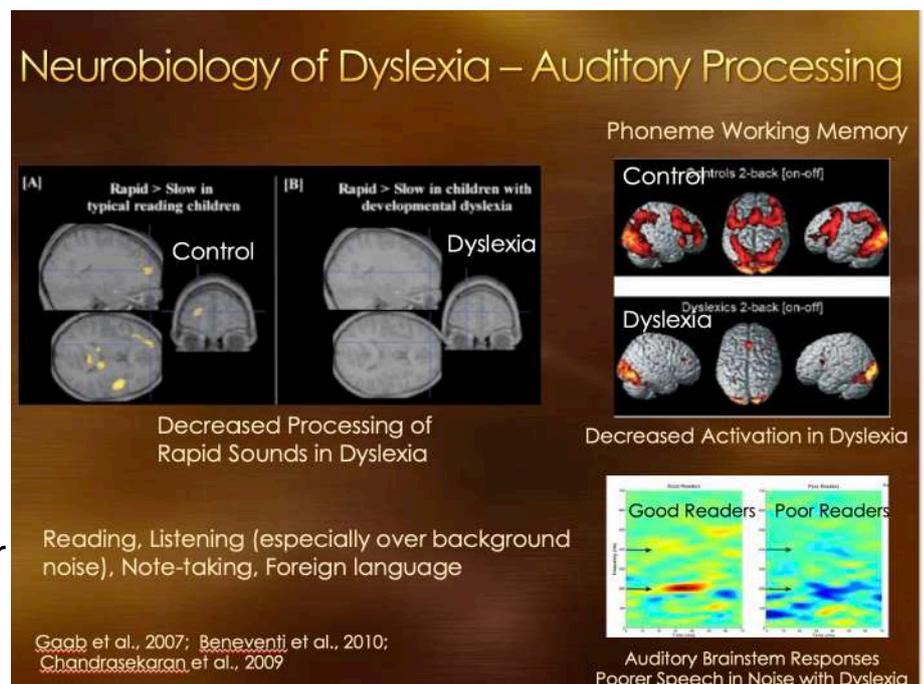
# WHAT'S THE CONNECTION BETWEEN AUDITORY PROCESSING AND DYSLEXIA?

It's not uncommon when we speak to groups about dyslexia that someone asks why we are mentioning auditory processing when they (mistakenly) believe dyslexia is only about reading.

In fact, there is substantial research literature about dyslexia and auditory processing difficulties - sometimes the problems can present with difficulty in learning phonemes, but other times it may affect sensitivity to auditory distractions, trouble listening to rapid or foreign speakers, and problems hearing in the presence of background noise. People who are dyslexic themselves or live with people who are dyslexic may know all about this. It's a good example of how simplistic definitions can confuse rather than help.

There's been extensive work about auditory processing differences found in dyslexic vs. non-dyslexic groups. The figure below is from a talk I gave years ago at a professional meeting.

The most important point for dyslexic people to know is that the difficulties they may be having are real and physiologic - and yet there may be many people who aren't aware of it because they learn about dyslexia from a narrow perspective - likeseeing dyslexia from a reading- or spelling-only perspective. They may not be familiar with any broader neuroscience perspective at all.



It's now well-established that auditory processing problems and reading difficulties co-occur and 50% of dyslexic children may be affected. ([Sharma et al., 2009](#)).

What is the difference between hearing and auditory processing? Hearing problems generally refer to problems due to dysfunction in the ear, whereas auditory processing problems refer to problems with what the brain does in processing sounds.

### HEARING AND AUDITORY PROCESSING PROBLEMS ARE COMMON IN CHILDREN

Complicating the co-existence of auditory processing difficulties and dyslexia is the fact that auditory processing problems are fairly common among children in general because of ear infections (the short eustachian tube). Respiratory viruses and sometimes a history of premature birth or other birth stress may predispose children to auditory processing difficulties.

In our practice we looked in the ears of students and did a rudimentary hearing frequency test. We referred students out for further testing by an audiologist if ear or brain-based auditory processing difficulties were suspected.

If students have dyslexia and chronic ear infections, they will have more trouble learning low frequency sounds and may appear to be visual learners because hearing is weaker. Over time, though, many students' auditory processing dysfunction may improve considerably.

### WHY AUDITORY PROCESSING AND DYSLEXIA?

If it's not ear infections or early childhood causes of auditory processing difficulties, then why should auditory processing issues be associated with dyslexia? Some researchers posed interesting association might exist (for instance the "neural noise" hypothesis of [Hancock et al., 2017](#) or even the "auditory search" idea of [Taylor and Vestergaard \(2022\)](#)'s Exploratory Specialization paper).



## AUDITORY PROCESSING

I don't want to go too deeply into these technical theories here, but just want to assure you that these auditory symptoms are real and physiologic. Some people can be quite disabled by them, but if you are aware of the problem or problems, you can compensate and take positive steps.

### IF AUDITORY PROCESSING AFFECTS READING

If severe, auditory processing problems can affect the acquisition of reading skills. Individuals with severe auditory processing difficulties will have trouble hearing certain sounds and errors of sound processing will be observed in pronunciation and spelling. Assessment should include examination by an audiologist who has a sound-proof testing room. School-based auditory testing will never be sufficient for screening in these cases. Specific recommendations may improve hearing to the point that it will help reading and sound processing in general. Some individuals will need to have their hearing difficulties treated with medical or surgical interventions or hearing amplification.

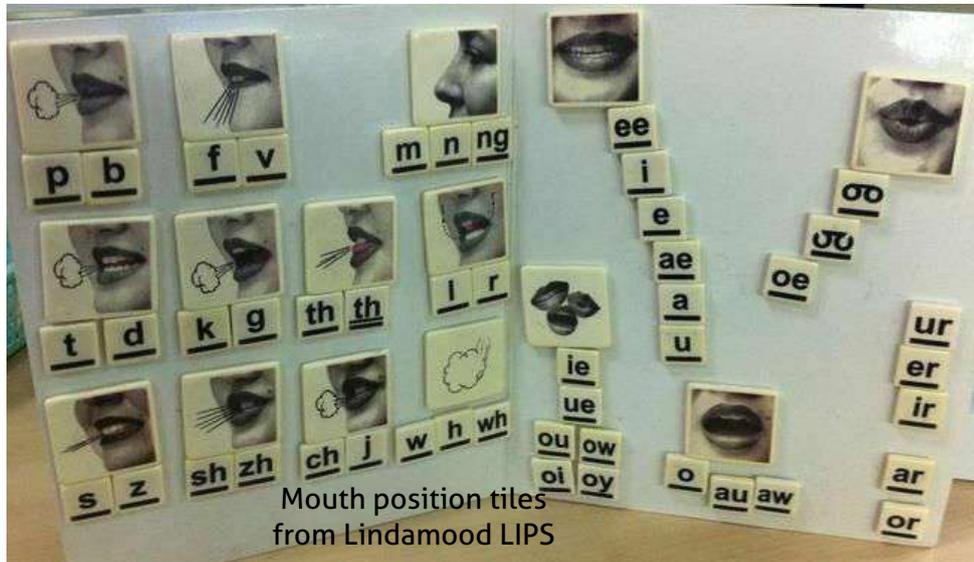
It is important to be vigilant about the possibility of hearing difficulties as children who may develop these problems from an early age may not have experienced "normal hearing". Therefore, they may not know that sounds are not coming through to them clearly.

### DYSLEXIA CURRICULA WITH SPECIAL SUPPORTS FOR AUDITORY PROCESSING

There are two curricula with additional supports for reading, Lindamood Bell's [LIPS](#) program and [Wired for Reading](#). Both these programs include extra attention to mouth positions when teaching students phonemes. These may be critically important for students with auditory processing difficulties. If they cannot hear the sounds clearly, having other ways to check that they are saying the words correctly may be essential.

These supports may not be necessary for many dyslexic students; however, if a student is failing to progress on a comprehensive structured literacy program, it might be valuable to see whether auditory processing or another program with multisensory supports for registering sounds correctly may be helpful.

## WATCHING TEACHERS' MOUTHS SEEMS TO HELP SCHOOL CHILDREN WITH DYSLEXIA



Perhaps because auditory processing problems are common among dyslexic children, one recent study ([Galazka et al., 2021](#)) found that dyslexic children who were better readers were more likely to watch the mouth of a demonstrator under phonologically-demanding conditions. So "mouth-reliance" is not a bad thing - it is likely an indicator that a child has figured out that attending to a person's mouth positions will help them more accurately pronounce sounds.

## WHAT IF PEOPLE TALK TOO FAST?

What can be done if teachers or colleagues or recorded talks are faster than can be processed? Well, if it's a classroom teacher or professor, ask them if it's possible to talk more slowly. It's likely you're not the only one to have trouble processing everything that they say. Sometimes people will slow themselves down, but it may not last - so having additional supports in place can help.

Having handouts ahead of time can help listeners anticipate what will be said - and help in the event that speakers still talk too quickly. A reasonable accommodation is asking to record speakers for private purposes only. There are many apps (including smart phones with recording and or recording- to-transcription functions, so that tech gadgets like Livescribe pens may not be necessary. Examples of apps include [Just Press Record](#), [Evernote](#), and [Otter.ai](#).

If presentations or lectures are recorded, then there are always options to play videos again, or also customize the speed (check the gear options), but this also slows down the voice and affects the pitch, which may complicate listening.

One re-listening hack is to generate a transcript of the video from software like Otter, then use the transcript to just relisten to the parts where a lecture or meeting became confusing. Having a transcript with screenshots can also speed review later.

Be aware that some teachers may oppose being recorded and recordings may not be possible at all in corporate settings for confidentiality purposes. Nevertheless, you can always say, "could you write that down for me" or see if meeting notes could be shared later.

## REDUCE BACKGROUND NOISE

Background noise is a common challenge for dyslexic people (as well as others). In classrooms, optimizing listening and learning may involve "preferential seating" (seating students away from talkative students or distracting sounds sources like open doors, windows, or heaters, air conditioners, or overhead projectors), use of an [FM speaker or headset](#), and environment changes like carpeting, or putting sliced tennis balls on chair feet (reduces the scraping sound of chairs on floors).

Some college students request single dorm rooms and may use earbuds (with or without music) or sound-cancelling headphones to reduce distractions. Oddball noises are more distracting than regular predictable sounds (like white noise or pink noise generators) or very familiar music. Employees can request office space with a door; this also may not always be available, but may be more common as more workers are allowed hybrid-remote working.

Sometimes hearing can be very difficult outside due to background noise and acoustics that make it difficult to hear. Workers who have to network at meetings or over meals may find it difficult in certain environments to follow conversations with the roar of others speaking or background noise from a busy restaurant or outside cafe. Be pro-active about seating and learn what you can about optimizing hearing environments. Some people buy [musician's ear plugs](#) at sites



## FLORENCE WELCH + THE MACHINE SINGER SONGWRITER

**“Being a creative person and getting older, and wiser, has been an awakening. The older I get, the more self-assured I feel and the more confident I feel in my work and in life.” - Florence Welch**

Florence Welch is an English singer-songwriter who writes and sings songs that are steeped in folklore and fantasy imagery. She has spoken both about her [dyslexia](#) and [dyspraxia](#) in various interviews.

Florence became a pop star at the age of 21 when she was discovered singing in a club bathroom.

She would go on to have Grammy nominations and platinum records, but also had some tumultuous times with heartbreak. One of her breakthrough songs was Ship to Wreck ([lyrics](#)), after the breakup of a long term relationship.



## INSPIRATION

Florence struggled in school, but sought refuge in music and enjoyed the arts, recalling many visits with her mother to museums and art galleries (Florence's mother was an art professor as was her maternal grandmother).

Despite struggling with spelling and writing, Florence grew up in a creative family and she found refuge there as well as with the arts and stories.

Florence recalled attending a Beatles-themed party with her father in which she dressed up as Eleanor Rigby, carrying a crumpled photo of her face "in a jar" while her dad (an advertising executive) came as the song Hello Goodbye, wearing a backwards suit and mask on the back of his head.

Florence's paternal grandfather was a satirist and editor at The Telegraph, leading a reporter from [The Times](#), to note, "Little wonder Florence is possessed by words, jokes, and historically gothic imagery, her childhood spent in imaginative fancies pretending to be "a witch, or a fairy warrior, living in trees for weeks."

Recently, Florence wrote an essay in [Vogue](#) embracing her life in her 30s:

"..I wonder if my young self would be horrified at my Friday nights now: eating pasta and watching TV with someone who is nice to me. Would she think me mundane? I have certainly had journalists bemoan to me "the lack of rock stars behaving like rock stars", but hedonism never gave me the freedom I desired... Most of the friends that I drank with have had to stop. They wash up one by one like driftwood, and we stand together on the shore in shocked relief. We cook, we talk, we work. People have started having children and going to bed early. And all the boring "grown-upness" that we rejected then, now seems somehow rebellious. It is an act of rebellion to remain present, to go against society's desire for you to numb yourself, to look away. But we must not look away."

"To self-crucify in the name of art always means that the art stops, and another voice is lost. At this time in our history, it has never been more pressing to have as many voices singing as we can."



## DYSLEXIA FOR TEACHERS ONLINE COURSE

### For General Classroom Teachers

- How Dyslexia Presents
- What Good Remediation Looks Like
- » Evidence-Based Strategies that Work
- » Ways to Support with Accommodations
- » Gifted, ELL, Social Emotional & more!

### CLOCK HOURS & GRADUATE CREDITS



Dyslexic Advantage &  
Seattle Pacific University

## Homeschooling for Dyslexia Online Course for Parents

### HOMESCHOOLING DYSLEXIA ONLINE

For Homeschooling parents,  
Microschools, and Tutoring  
groups





## QUESTION: KEEPING UP WITH WILSON AT SCHOOL

**Question:** I have a third grade student who attends a school that used Wilson Foundations in the earlier grades. The problem is that even though my daughter did some summer work, she's been having trouble keeping up. She's dropped down a level from her peers so that she's just repeating what she had been taught before. There is less stress in the lower group, but would changing her to a different curriculum be a better option ?

**Answer:** This is a difficult question to answer specifically. Ideally, someone who really knows your student could give you specific guidance on whether repetition or a new curriculum might be a better move.

The Wilson Foundations program is designed for general education classrooms. It (as well as other programs that emphasize phonological awareness) can be a valuable introduction to reading, but it was not designed for the remediation of dyslexic students.

Dyslexic students often require more one-on-one or small group work and practice. They often require more repetition and close feedback on errors and mispronunciations. Group activities like choral reading can give all students practice in reading aloud without pressuring dyslexic students to read aloud individually in class. But in isolation, there may be little feedback and correction which is necessary for many dyslexic students to progress.

The Wilson program designed for dyslexic students is the Wilson Reading System. You can learn more about this program on their [site](#).

A bigger question is whether it will be sufficient to drop your student down a group (so she repeats the previous lessons) or whether some other change is necessary.

## Reinforcing Lessons at Home or After School

Some parents may want to meet with their teacher to see if there are any resources that their student can use to reinforce learning at home.

Many curriculum providers have optional resources that could help your student be more successful proceeding through a curriculum.

Some students really do require more time - the important thing is not to put pressure (consciously or even subconsciously) when things improve more slowly.

Development progresses very unevenly for students - so that there can be a lot of slipping back in the early years - but the important thing is not to be discouraged, and to make sure that learning is still happening with assistive technology and audio learning and time to foster strengths.

There are differences that exist between curricula and ideally a teacher, tutor, or other professional can guide you to reinforcing or making changes to a different curriculum if necessary. Usually in the schools, demonstration of a failure to progress on a given plan can support these changes in an Individualized Education Plan (IEP).

## Curriculum Switch Still Might Be Considered

Curricula vary by their pace, nature of their activities (kinesthetic, visual, verbal, game play) and reinforcement (review, decodable passages and books), and typically districts offer other options. Check if this might be better for your child, but also be aware that teachers may not be a well-trained in less common programs.

Some schools have received extra funds for "high impact tutoring" because of the pandemic. It also might be that you can request support for your daughter with additional tutoring after school. The need for repetition by itself should not be seen as a "problem", but depending on the classroom culture and other factors, too much repetitive practice can also have negative effects, contributing to problems like lower self-esteem or anxiety.

# NEW WAYS TO HACK LEARNING

Almost every structured literacy program uses letter tiles and flashcards. The reason for this is that there are so many word parts and whole words to learn and the use of tiles and cards can give students visual support as they focus on various letters, letter groups, and their sounds while building up reading fluency.

Some students may have difficulty learning with tiles and cards if the lessons or demonstrations proceed too quickly, or if working memory is easily overloaded or motor challenges make hands-on activities more difficult than less kinesthetic ones.

Activities like word sorts may also provide a little physical activity that help students stay alert and engaged whereas more passive study may have them drifting off.

For college kids and adults, flashcards can provide meaningful and efficient practice (spaced repetition) to allow a person to focus only on facts or words they do not know.

We've spoken about spaced repetition and interleaved learning before (read more [HERE](#)), so in this article I wanted to focus more on logistics and how to change up flashcard practice to reinforce learning and make the practice more enjoyable.

## FLASHCARD GENERATORS

First, there is a wide variety of free or paid online flashcard generators to create your own personalized decks.

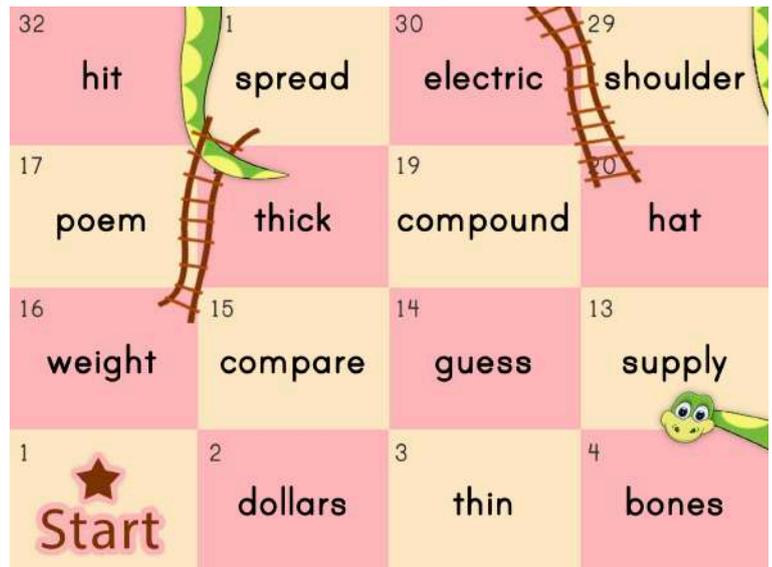
A great resource (including for game ideas) is [Sightwords.com](https://www.sightwords.com).

You can print out Dolch or Fry words or your custom list on their [Flashcard Generator](#) Page. They also have a [Bingo Card Generator](#) so you can play against your student and give them more practice with sight words.

To lighten your student's practice, check out all the games and free downloads that the site has to offer.

Here is an example of a Snakes and Ladders board created from Fry 9th 100 words.

Select the words you want to be working on, click to generate the cards, and download and print the PDF file.



## EDUCATION HACKS

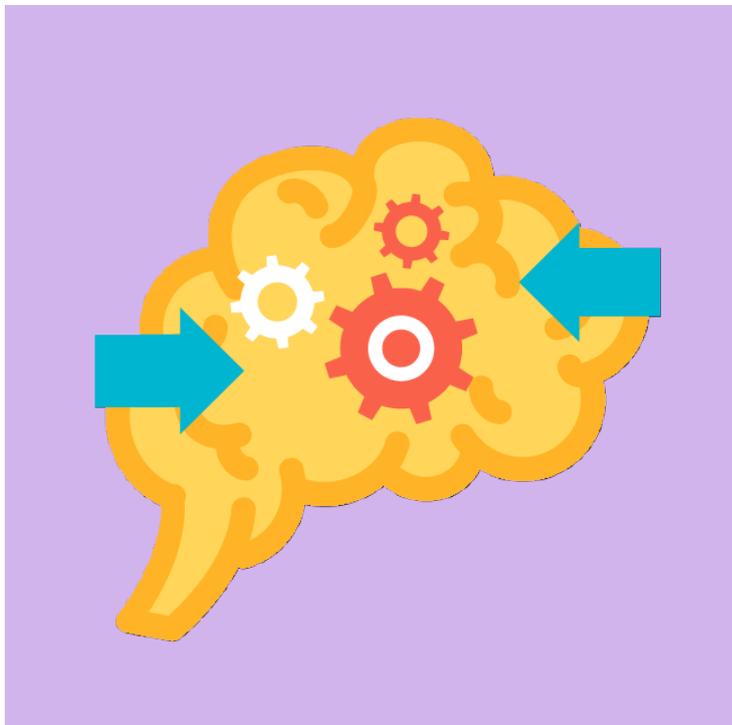
College students and grownups who want to enjoy continually learning may opt digital flashcards (including some newer AI-powered flashcards) to power their mastery. Digital flashcards can be an efficient way to study for high stakes tests, learn new vocabulary and languages, and anything else.

We have mentioned the wide selection of already created flashcards for common university-assigned courses through sites like [Quizlet](#). Our son found his Spanish and psychology texts on Quizlet which meant that he could use the cards immediately without having to type in all the content. Quizlet flashcards have options for audio and pictures - which may help students who otherwise might find reading terms tedious. Quizlet has some simple variations on click and flip flashcards (for instance matching), but other sites like [Cram.com](#) have more game play.

Newer additions to the flashcard-self-study apps include interesting AI-powered programs that may be valuable or even life-changing for some who have to read dense technical papers for higher education or work. I tried a number of free trials and two stood out.

The first is [Scholarcy](#), an "AI-powered article summarizer".

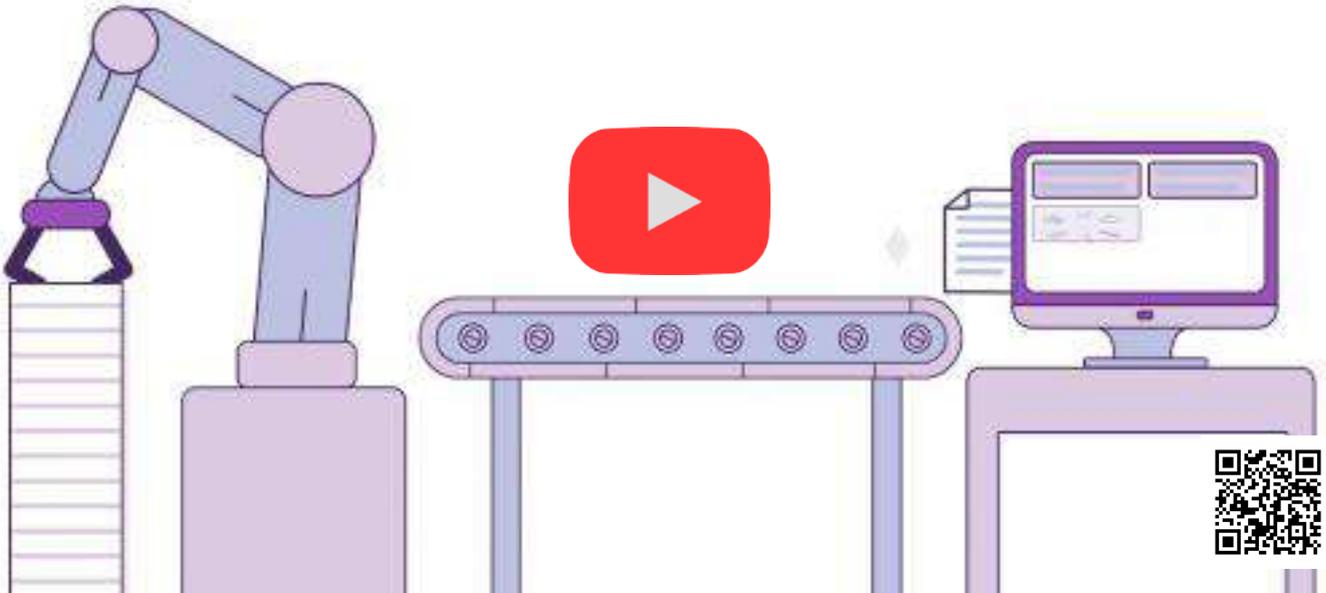
It summarizes the whole paper with highlights and rewritten statements in the third person. It finds references and extracts tables and figures, even suggesting background reading and a comparative analysis. There is a free Chrome or Edge extension that creates summary cards from documents. There is a free limited version as well as a personal library level for \$7.99 per month.



Obviously, one needs to be very careful about the software to make sure the summaries are accurate. I only used it on one paper in a trial and it was clearly better than other AI-summary software that I surveyed. There are also a variety of questions that can be generated for self-testing. Teachers may use it to generate test questions, but students can also use it to self-test or even pre-learning before reading through a paper again.

Another software that looks promising and is still in beta (so it's free) is called [Limbiks.com](https://limbiks.com). To use, files are uploaded and flashcards are generated that can also be imported into [Quizlet](https://quizlet.com), [Anki](https://ankiweb.net) or [Cram](https://cram.com). It's a lightweight and free option

## scholarcy



These tools may also be helpful for homeschooling parents who would like to periodically check that students are comprehending readings. Powerpoints can also be imported into Scholarcy and Limbiks. Another competing software is [Quillionz.com](https://quillionz.com) for questions and quizzes, but Scholarcy with its excellent summarization and highlights is a better choice for those in academic careers.

# MATH GAMES FOR ALL

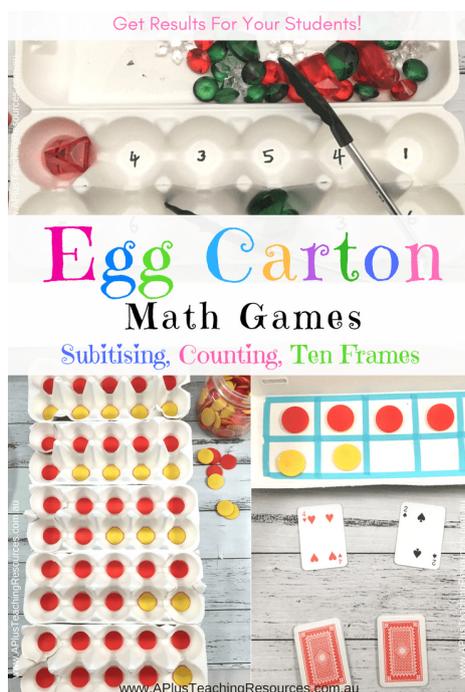
Math games are a great way to build a hands-on sense for number flexibility and quantity. The best situation is if hands-on and visual math activities are started from the beginning, but the good news is that it's never too late to start.

Even students who are taught almost exclusively in rote/symbolic ways can benefit by activities and reinforcements at home or in out-of-class tutoring sessions.

## SUBITIZING AND NUMBER SENSE

Subitizing is a term that refers to a rapid and confident judgment about a small number of items. If you have three coins in your hand or five do you quickly know how many coins there are without having to count? That number sense is important before progressing to higher calculations.

Click on the photos below to see ideas and examples of simple manipulatives for subitizing practice. Victoria also has fun ideas to increase students' confidence in recognizing numbers presented different ways (see [here](#)).



Dr. Paul Swan has nice collection of math resources - including math games through algebra. In one free download (see below), he outlines an orderly sequence for learning basic addition and subtraction.

If only we all had had such an orderly multisensory introduction to math!

Visit Paul's site to download this fine chart in high resolution ([here](#)).

Other milestones charts and free resources are available [here](#).

## BASIC FACTS: ADDITION AND SUBTRACTION MILESTONES

**Foundation**

**Yr F ACMNAD01:** Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from one starting point.

**Ability to Identify the Larger Number**

Units may be made to move along a track. A roll of 4 moves further than a roll of 3.

Start: 1 2 3 4 5 6

Materials such as dominoes and cubes may be used to model this.

**Counting Principles**

**Five Principles**

1. Know the number names in order.
2. One to one matching.
3. The last name spoken in the count represents the total of the set (cardinality).
4. Order Invariance: the count can start anywhere.
5. Abstraction: children will at first only count objects that are similar; later they will count collections of different objects and later still, unseen objects.

**Year 1**

**Yr 1 ACMNAD05:** Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts.

Explore links between addition and subtraction.

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	3	4	5	6	7	8	9	10
3	3	4	5	6	7	8	9	10	11
4	4	5	6	7	8	9	10	11	12
5	5	6	7	8	9	10	11	12	13
6	6	7	8	9	10	11	12	13	14
7	7	8	9	10	11	12	13	14	15
8	8	9	10	11	12	13	14	15	16
9	9	10	11	12	13	14	15	16	17

Whole (9) Part (7) Part (2)

Make use of the commutative property to apply the Count on from the larger Number strategy e.g.  $7+2$  is the same as  $2+7$ .

**Year 1 Strategies and Understandings: New Facts to Learn**

**Addition Strategy 1**

**COUNT ON FROM THE LARGER NUMBER**

Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts.

Count on:

By 1: **Facts to Learn:**  $1+1, 2+1, 3+1, 4+1, 5+1, 6+1, 7+1, 8+1, 9+1$

Join Cubes to form the larger number. Add (join) a cube of a different colour. Hold the stick at the point where the two colours join. Count on.

$4 + 1 = 5$

By 2: **Facts to Learn:**  $2+2, 3+2, 4+2, 5+2, 6+2, 7+2, 8+2, 9+2$

Hold a number in your head and count on.

e.g.  $5 + 2$ .

By 3: **Facts to Learn:**  $3+3, 4+3, 5+3, 6+3, 7+3, 8+3, 9+3$

By 0: **Facts to Learn:**  $1+0, 2+0, 3+0, 4+0, 5+0, 6+0, 7+0, 8+0, 9+0$

This is really the Additive Property of Zero, that is, the sum of any number and zero is that number. Ensure that students understand this pattern.

**Understanding 2**

**ADDITION PROPERTY OF ZERO**

**Facts to Learn:** See 'Count on from the larger Number, by 0'

The Additive Property of Zero states that a number will not change when 0 is added to it (see the green shaded numbers in the above addition grid). Essentially this is using the strategy 'Count on from the larger Number, by 0'.

**Understanding 1**

**COMMUTATIVE PROPERTY**

**Facts to Learn:** Once a fact is learned, the reverse fact should be known too.

Numbers may be added in any order without affecting the result (sum) e.g.  $4 + 1 = 1 + 4$ . This means that if you learn one fact you get one free. In fact you are rearranging parts.

**Teaching Tools:**

- Use cubes in two colours.
- Ten board.

**Subtraction Strategy 1**

**COUNT BACK (SUBTRACTION) BY 1, 2, 3 or 0**

**Facts to Learn:** Related to count on by 1, 2 and 3. e.g.  $1-1, 2-1, 3-1$ .

Counting back is similar to counting forward by 1, 2, 3, 0. Some students experience difficulty counting back across the decade. Begin counting back one.

**Subtraction Strategy 2**

**SEE SUBTRACTION, THINK ADDITION**

**Facts to Learn:** All related addition facts

Whole	0
Part	Part
7	?

**Year 2**

**Yr 2 ACMNA030:** Solve simple addition and subtraction problems using a range of efficient mental strategies.

**Yr 2 ACMNA020:** Explore the connection between addition and subtraction.

**Fact Families:** Link addition and subtraction facts: learn one fact get 5 free. For example:

Whole: 9 Part: 7 Part: 2

$7 + 2 = 9$  |  $7 + \square = 9$  |  $9 - 2 = \square$   
 $2 + 7 = 9$  |  $\square + 2 = 9$  |  $9 - 7 = \square$

Review all Count on from the larger Number facts.

**Year 2 Strategies: New Facts to Learn**

**Addition Strategy 2**

**BUILD TO TEN**

**Facts to Learn:**  $1+9, 2+8, 3+7, 4+6, 5+5, 6+4, 7+3, 8+2, 9+1, 0+0$

This strategy accounts for 3 new facts ( $0+4, 4+5, 4+6$ ) and revision of 6 facts.

**Teaching Tools:**

- Ten frames: an ideal tool for teaching the 'ten facts'.

**Addition Strategy 3**

**DOUBLES**

**Facts to Learn:**  $0+0, 1+1, 2+2, 3+3, 4+4, 5+5, 6+6, 7+7, 8+8, 9+9$

This strategy accounts for 5 new facts ( $4+4, 5+5, 6+6, 7+7, 8+8, 9+9$ ) and revision of four facts ( $0+0, 1+1, 2+2, 3+3$ ). The associated subtraction facts for the doubles equal zero, e.g.  $4-4=0$ .

**Teaching Tools:**

- Cubes in two colours may be used to model this strategy.

**Addition Strategy 4**

**NEAR DOUBLES**

**Prerequisite:** Knowledge of doubles facts

**Facts to Learn:**  $1+8, 2+7, 3+6, 4+5, 5+4, 6+3, 7+2, 8+1, 9+0$

Students will need to know their doubles facts and then make an adjustment to the calculation and compensate for it. For example  $6+7$  is  $6+6$  and one more or  $7+7$  take one. The associated subtraction facts all have a difference of one, e.g.  $5-4=1$ .

**Teaching Tools:**

- Cubes in two colours.

**Addition Strategy 5**

**BRIDGE TEN**

**Prerequisite:** Build to ten facts, partitioning

**Facts to Learn:**  $7+4, 8+4, 9+4, 7+5, 8+5, 9+5, 8+6, 9+6, 7+6$

This strategy accounts for 9 new facts. Conceptually there are 0 new facts ( $7+7, 7+5, 8+4, 8+5, 8+6, 9+4, 9+5, 9+6, 9+7$ ). The '0' facts can be recalled first then the 8+ facts and so on.

**Teaching Tools:**

- Ten frames
- Number line

Example:  $9 + 6 = 10 + 5$

**Leads to Year 3**

**Yr 3 ACMNA055:** Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation.

**Yr 3 ACMNA054:** Recognise and explain the connection between addition and subtraction. Link 'no part part whole' thinking.

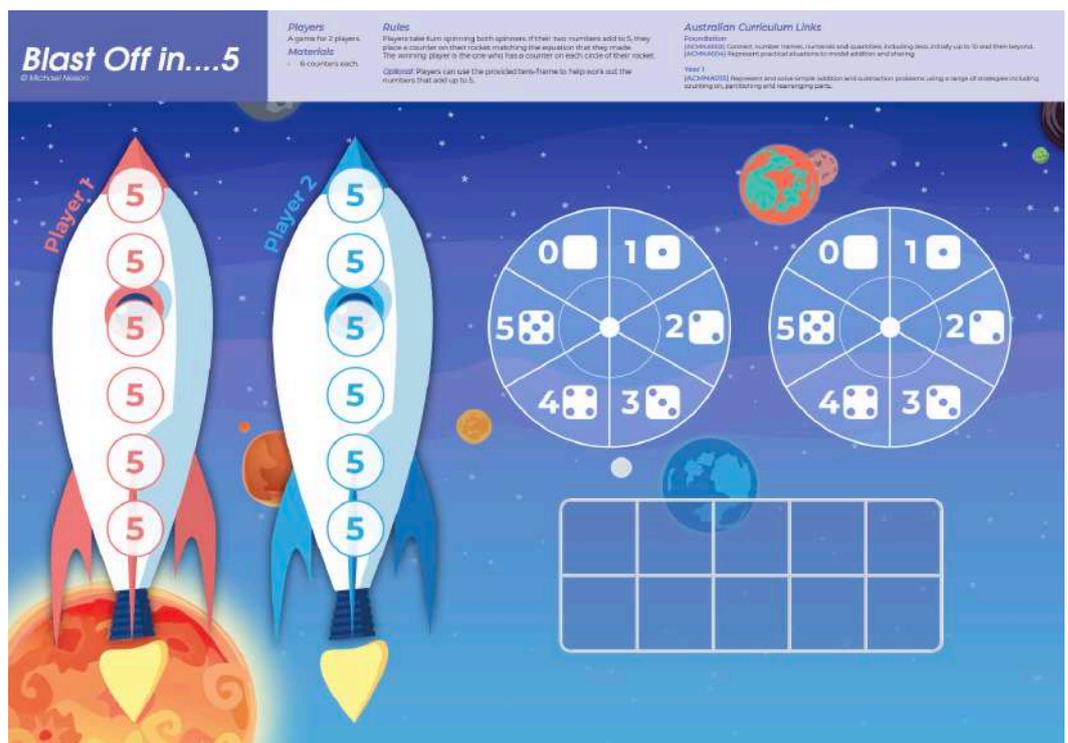
Version 26/07/2019

Paul talking about teaching math at home.



To the right is an example from his Blast Off game board. There are different game boards for numbers adding to 2-10.

In the 5 Game, players put counters down only if their spin results in numbers that add up to 5.

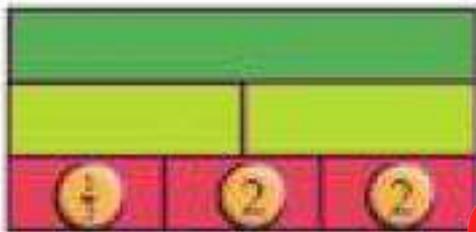


Algebra can naturally lead from simple math operations if students practice "substitution games."

[Arithmophobia No More](#) talks about these substitution games [here](#).

The idea is to start with a simple equation like  $1 + 2 = 3$ , then to continue making substitutions for one number at a time. So a child can make substitutions for the number 1 by writing  $4-3$  or  $1+0$  or  $10-9$ , and so on.

The more math a student knows, the more elaborate the substitutions. In the video below, the substitution game is played with Cuisenaire rods and fractions.



At higher levels, the substitution game can use exponents and polynomials.

If you are looking for more comprehensive resources teaching algebra with manipulatives. There are [books](#) for this - and sometimes these books can be found online (for example, [here](#)).

# HOW TO SURVIVE AND THRIVE AT PARENT-TEACHER CONFERENCES

Some teachers find parent-teacher conferences the most stressful part of their job so it's best to keep that in mind before you head off to the meeting.

I remember we had "good" meetings and "bad". The good ones seemed so easy - sit back and be presented with student work and positive comments. But there were also hard ones, frustrating ones, and depressing ones. People react to conflicts and crises in different ways - so that there can be psychological minefields for everyone involved in parent-teacher conferences - the parents, the teachers, and the students...and it all seems to go by so fast.

## BRING SOMEONE

If you're a single parent, bring someone with you - whether it's a friend, fellow classroom parent, or relative. If your partner can't make it, see if they can be patched in by phone or Zoom. If your student works with a tutor, ask if they can attend. It's good to have another set of eyes and ears at the meeting and it can also keep the discussion on a more professional level.

## SHARE WHAT YOU SEE AT HOME AND WHAT YOU BELIEVE YOUR STUDENT NEEDS

Remember the value that you are bringing to the parent-teacher conference. You're providing context for your student - as well as to help to foster success.

Share what helps your student and what she or he may be struggling with at home. Write down requests like reduced homework, extra time on tests, designated note-takers, audio or e-book options, and accommodations to type work with a spell and grammar checker.

The above requests are usually part of an IEP or 504, but if your student is still on a waitlist to be tested (some school districts have severe shortages of school psychologists and speech language pathologists) you can still ask, and present what information you have on your student (like a letter from a tutor or report from an online screener like the one from [Neurolearning](#).)

### **IF YOUR STUDENT IS STRUGGLING, THE SCHOOL MAY BE MORE MOTIVATED TO TRY WHAT YOU SUGGEST**

Write requests down and make sure you provide an email and/or phone number with a time when the teacher can reach you and ask you questions. If your student has stress at home or is developing secondary problems like anxiety or depression due to academic pressures, then share that with the teacher.

When students are regularly asked to do things that they can't possibly do (like write a three page paper each week), then have your student communicate that to his or her teacher and let your teacher know where your student really is with writing.

For example, you can say - my student has dyslexia and dysgraphia, and is working with (me/a tutor) on writing sentences. It would be impossible for him to write a three page paper each week, but he could write a partial draft in a week, and then complete by the following week.

Try to work with the teacher, but it's also fine to ask for what a student needs. Giving students more time to get work done and work with assistive technology will help them to make more progress than missing so much work that it would be impossible to ever make up.

There can be a worry that a parent is acting like a "helicopter parent" by being too protecting and ready to swoop in to help when the student should be doing that for themselves, but in the context of dyslexia, usually the reverse is true. Development for students is late-blooming and help from parents may benefit tremendously later.

## PARENT TEACHER CONFERENCES

It's very important that dyslexic student's strengths are recognized in the classroom. Too often they are underestimated and intellectual challenge is not provided. Appropriate supports and technology are essential to support their educational success.

### WHAT ABOUT A DIFFICULT PARENT-TEACHER CONFERENCE?

First, if you are a parent trying to prepare for what might be a difficult meeting, realize that teachers may be having difficult meetings with other parents and plenty of stress from upset parents. Remember you are partner together to help you student be successful. Offer to help the teacher if you can - whether it's by volunteering or supporting efforts the teacher is making at ho,e.

Realize too, that many dyslexic parents have post-traumatic memories from their childhood - it's not easy maintaining your cool - and when a casual remark about poor effort or expecting too much may be made. Statemens like that can trigger strong emotions. Try not to get angry or emotional, even if it may seem justified.

There has been a lot written about the impact of emotions on negotiations (for example, [here](#)). Prepping yourself beforehand may help you keep calm and be less surprised about events that could happen at your meeting.

Remember, you can disagree with a teacher's assessment - but it's also early in the year. You have time to work together on a plan that might help your child. It is common for instance, for students to be assigned more work than they could possibly complete.

Try to anticipate the concerns of your student's teacher. Enlist the support of a tutor if your student is working with one. It is common for dyslexic students to need more time drafting and elaborating work. They can also learn a great deal working with technology programs (like [Co:Writer](#) or [Ginger](#)) so that by the end of a school year their writing skills will be stronger.

Teachers may also be open to a trial of taking different approaches. Do your best to find middle ground and a practical plan for your student.

# QUESTIONS TO ASK DURING YOUR NEXT PARENT TEACHER CONFERENCE

Parent/Teacher meetings can be a great opportunity to learn how your child is doing and how you can help improve their school experience. Here are a few questions to keep in mind when meeting with your child's teacher.

**tutor doctor**

What are my child's strengths?

Is my child performing at grade level for each subject?

What technologies or resources do you recommend to help my child build their learning?

Do you see any areas of concern in class – with subject matter, homework/assignment completion, or interacting with peers?

Are there any standardized tests this year and how can I help my child prepare?

What do you feel should be my child's biggest area(s) of focus this year?

Does my child participate well in class activities and discussions?

How is learning personalized for students?

Does my child appear happy and engaged?

What can I do to help improve their learning experience?

Is my child organized, prepared each day, and taking responsibility for their belongings and homework?

Is my child taking an active role in their own learning?



## What is Dyslexia?

Dyslexia is a Common Learning Difference

1 in 6 Students are Dyslexic

**Challenges**

- Reading
- Time Awareness
- Writing and Spelling Note-Taking
- Note Memory (e.g. Math Facts)

**Strengths**

- Good Problem Solvers
- Creative
- Social / Empathy
- Observant

### Dyslexia-Friendly Classrooms

- Encouragement
- Teach the Big Picture
- Talk Things Over
- Learn By Direct Experiences
- Learn with Pictures and Stories
- Don't Over-Correct
- Allow Extra Time
- Assistive Technology
- Break information into steps
- Note-taker
- Work Open Book Formula Card

### Dyslexia at Different Ages

What You May See

- Early Elementary (Ages 9-10):** Slowest Learning to Read, Problems in Reading, Writing, Mild Speech Challenges, Mixed Dominance, Right-Left
- Late Elementary-Middle (Ages 10-14):** Needs Extra Time, Difficulty Reading Aloud, Writing and Spelling Issues, Rote Memory Programs, Knows More Than Tests Show
- High School-College (Ages 15-20+):** Needs Extra Time, Difficulty Reading Aloud, Quantity of Work Less Than Expected, Writing and Spelling Issues, Foreign Languages Hard, Rote Memory Programs, Knows More Than Tests Show

Help all with...

- Acceptance and Support
- Focus on Strengths and Abilities

**DyslexicAdvantage.org**

Dyslexic Advantage is a 501(c)(3) nonprofit organization

link

Above, some questions you can bring to your student's parent-teacher conference.

At right, one of our Dyslexia Cards that can be purchased from our [shop](#). These can be used for a variety of purposes, including parent-teacher conferences.

A nice thing about the cards is that they mention common ways to support dyslexic students, including providing extra time, using assistive technology, using a note-taker, and allowing students to work open book.



"If you do something with your whole heart  
and it's a mistake, you can live with that ..."  
- Florence Welch