Teaching Students with Language Based Learning Disabilities
Hello.

I AM SARAH CIRAS

I am a CS teacher at Landmark High School with an M.S. Ed. in Moderate Special Needs 5-12.

You can find me at:
SarahCiras@gmail.com
Students served with a Specific Learning Disability under IDEA Part B in 2017-2018 across all grades

57,400,000
Students Nationwide

2,342,000
have a Specific Learning Disability.

4.6%
of all students.

1. ANYONE CAN LEARN CS

They just need the appropriate accommodations.
MY STUDENTS ALL HAVE LEARNING DIFFERENCES

However, they have had great successes (and failures!) in my classes.
2. SPECIFIC LEARNING DISABILITIES

A hugely varied umbrella.
WHAT IS SLD?

Specific Learning Disabilities or Differences. It can include difficulties with:

- Oral and/or Written Expression
- Decoding / Fluency / Comprehension
- Auditory Processing
- Working Memory
- Dysgraphia / Dyscalculia
- Executive Functioning
READING

**DECODING**
is the ability to break down unfamiliar words.

**FLUENCY**
is the ability to read at an appropriate rate, with accuracy, and with expression.

**COMPREHENSION**
is understanding what one reads. This can be at the literal or abstract level.
EXPRESSIVE DIFFICULTIES

ORAL EXPRESSION
Word retrieval.
Formulating thoughts in a timely manner.
Gap in receptive versus expressive.

WRITTEN EXPRESSION
Transferring thoughts into writing.
Grammatical difficulty.
EXECUTIVE FUNCTIONING

ORGANIZATION OF TIME
Breaking down long term projects.
Planning on a small scale - a night, a weekend.

ORGANIZATION OF MATERIALS
Physical Organization - Backpacks, Binders, Desks, Lockers, Bedrooms.
Digital Organization - Computer file system, Google Drive, E-Mail.

ORGANIZATION OF INFORMATION
Preparing for exams.
Study skills.
Understanding what is relevant and irrelevant.
Writing structure.
AUDITORY PROCESSING DISORDER
Difficulty processing auditory input.
Unrelated to cognitive processing.

WORKING MEMORY DEFICIT
Difficulty holding too much information in one’s short term memory at once.

PROCESSING SPEED
How quickly someone can process information and provide the desired output.
**BONUS LEARNING DIFFICULTIES**

**DYSGRAPHIA**
Difficulty forming letters manually.
Described to me by a student as ‘painting each letter individually’.

**DYSCALCULIA**
Numerical difficulties where the student confuses numbers, operations, and has increased trouble with basic maths.
3. ACCOMMODATING FOR SLD

There are many simple ways.
# Accommodating for Struggling Readers

## Decoding
- Allow for syllabication.
- Provide help in a positive manner.
- Adjust difficulty level when possible.

## Fluency
- Provide extensive readings ahead of time.
- Allow students to choose not to read aloud.
- Provide audio tapes or video tutorials if applicable.

## Comprehension
- Provide guided questions on the literal and abstract level.
- Preview vocabulary.
- Allow for class discussion and questions.
ACCOMMODATIONS FOR STUDENTS WITH ORAL EXPRESSION DIFFICULTIES

**ORAL REHEARSAL**
Orally question the student and allow them the time needed to answer, while providing cues and stems.

**PROVIDE CUES**
Use visual cues, semantic cues, gestural cues, phonemic cues, and questions to allow the student to retrieve the language needed.

**DISCUSSION**
Allow for discussion in the classroom, among peers, and in a small group format.

**VISUAL AND KINESTHETIC DEMOS**
Provide visuals and allow for movement and physical demonstrations whenever possible.

**GUIDED QUESTIONS**
Script questions to ask when completing oral tasks, allowing students to break down their answers - Why do you think that? How so? What makes you say that?

**SENTENCE STEMS**
Provide students with a cheat sheet of sentence stems - I think ____ because of ______.
# Accommodations for Students with Written Expression Difficulties

## Graphic Organizers

Clean and structured organizers for whatever they are working on. Try to anticipate roadblocks and provide prompts to allow maximum independence.

## Templates

Use an IDE that provides structural elements - an example of this is JetBrains Webstorm.

## Familiar Worksheet Design

I use “Task Cards” which follow a similar formula regardless of the content. I also structure pages in a unit in the same way so they visually go together.

## Technological Accommodations

Allow students to use a laptop or tablet to aid in writing. Allow the use of text-to-speech software to take the burden off writing.

## Pre-Writing

Use discussion and visuals to help drive writing. Try to anticipate roadblocks and provide prompts to allow maximum independence.

## Think Alouds

Use your own thought process to help spur students along when they are stumped. Have them re-verbalize these ideas.
ACCOMMODATIONS FOR STUDENTS WITH EXECUTIVE FUNCTIONING DIFFICULTIES

MODEL PLANNING
Break down a long-term project with a calendar.

BREAK TASKS DOWN
Break down large tasks into smaller pieces to avoid frustration.

LIMIT PHYSICAL MATERIALS
Use digital media as much as possible.

PROVIDE A MATERIALS SYSTEM
Spend a class discussing the ways they can organize their materials - both digital and physical.

GIVE ONLY VITAL INFORMATION
Teach on a need to know basis.

INTEGRATE STUDY SKILLS
Teach students how to use their resources appropriately - textbooks, key websites, IDEs.
ACCOMMODATIONS FOR WORKING MEMORY AND AUDITORY PROCESSING

EXTRA TIME
Processing time is key. Small scale and large scale - seconds in the classroom, hours in a testing scenario, as necessary for an assignment.

ONE-TWO STEP INSTRUCTIONS
Provide directions one or two steps at a time to allow for maximum success.

SPEAK CLEARLY, THINK ABOUT SPEED
Face the students when speaking and don’t race through words. You may not realize how quickly you speak.

PROVIDE ORAL DISCOURSE IN WRITING
Write notes as you speak or provide notes so students can attend to discussion fully.

SCAFFOLD COMPLICATED TASKS AND PROCEDURES
Scale assignments down when possible, outlining complicated procedures and instructions.

TEACH ADVOCACY SKILLS
Provide students a prompt sheet for when they are having trouble.
ACCOMMODATIONS YOU CAN IMPLEMENT FOR EVERYONE

EXTRA TIME
Processing time is key. Small scale and large scale - seconds in the classroom, hours in a testing scenario, as necessary for an assignment.

WRITTEN DIRECTIONS
Always provide directions where students can reference them. Have students who are struggling re-verbalize to ensure understanding.

FREQUENT FEEDBACK
Should go hand in hand with clear expectations.

COLLABORATIVE AND SMALL GROUP
Provide opportunities for students to learn from each other.

STRUCTURE AND ROUTINE
Having a routine benefits everyone. This can be flexible, yet still help students who are struggling.

MICRO-UNIT
Break down big concepts or projects.
ANY QUESTIONS?
4. USING THESE ACCOMMODATIONS IN A CS CLASSROOM

Approaches I have used thus far.
TOOLS FOR ACCESSIBILITY

WebStorm IDEs
YouTube
Quorum
Block based languages

HeadFirst by O’Reilly
Project Based Learning
Group Work
Hardware (Arduino, Raspberry Pi, etc)
FOCUS ON A GROWTH MINDSET

Students with LBLD often have had tough academic careers. Focus on the idea that they can get better at CS, no one is ‘naturally’ good at it.
A TYPICAL CLASS

○ FOCUS ON
  ● Routine
  ● Time
  ● Structured Templates
  ● Modeling
  ● Include Student in Learning Process
UNIVERSAL DESIGN FOR LEARNING

All students, regardless of ability, can benefit from accommodations in the classroom.
REACHING EVERYONE

- Having specific written instructions
- Rubrics - Clear expectations
- Scaffolding tasks
- Structured exercises

- Individualized Project Based Instructions
- Make failure okay
- Multiple Modalities
- Student is the expert on themselves
CREATING A **SAFE** CLASSROOM ENVIRONMENT

- Normalize Failure
- Provide Positive Models
- A place where students can learn, make decisions, and handle the outcome.
- Allow for Diversity
- Value Student Input and Achievement
SELF ADVOCACY IS KEY FOR SUCCESS

Teach students how to ask for help and accommodations.
A CASE STUDY

Zeizze’s Umbrella. Using resources. Interest driven. Safe environment.
A CASE STUDY

Dewey’s arcade cabinet.
Follow through.
Collaboration.
Getting past failure.
A CASE STUDY

Mark’s plant watering system.
Follow through.
Combining data.
Getting past failure.
WHERE TO BEGIN

1. Identify student needs
2. Outline accommodations
3. Implement as necessary
OTHER STUDENT PRESENTATION

Spelling difficulty
Writing is not a preferred activity
Loves to talk, always chatty
Passionate about video games
HOW TO ACCOMMODATE

Use a block based language
Use a higher level text based language
Use graphic organizers/word banks
OTHER STUDENT PRESENTATION

Struggles with organization
Very creative
Often seems to be day dreaming
HOW TO ACCOMMODATE

Project based learning
Provide written notes/instructions
Model creating organization systems
THANKS!

Any questions?

You can find me at:
sarahcirras@gmail.com
CREDITS

Special thanks to all the people who made and released these awesome resources for free:

- Simple line icons by Mirko Monti
- E-commerce icons by Virgil Pana
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