MISSISSIPPI DEPARTMENT OF EDUCATION

Ensuring a bright future for every child

Mississippi
Extended Curriculum Frameworks

High School Version

Language Arts, Mathematics, & Science
for
Students with Significant Cognitive Disabilities

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Introduction

The Mississippi Extended Curriculum Frameworks (MECF) High School Version includes curriculum content that students with significant cognitive disabilities in high school are expected to access and learn during the course of their instructional programs. The primary purpose of this document is to share the prioritized academic content with teachers, family members, and other educational stakeholders, and to guide the development of high-quality alternate assessments that assess the knowledge and skills representative of these extended standards.

Teachers should use this document to plan instruction and collect student work samples (e.g., documented teacher observations, student work products, recorded media) that can be used to establish a baseline about what students know and can do at the beginning of the school year and to measure progress on the same skills and concepts on the final assessment later in the school year. These student work samples can then be used as part of the submission for the Mississippi Alternate Assessment of Extended Curriculum Frameworks (MAAECF).

Designed specifically for students with significant cognitive disabilities, the MAAECF is a portfolio assessment that is aligned with the Mississippi Extended Curriculum Frameworks for Language Arts (Reading and Writing), Mathematics, and Science. The assessment measures student performance based on alternate achievement standards.

The MAAECF portfolio is a collection of student work from throughout the school year. Teachers select appropriate objectives for assessing students. Students are initially assessed on these objectives through baseline activities developed by the teacher. The teacher then provides instruction on the selected objectives throughout the school year. The teacher assesses these same objectives through final activities that he or she has developed. Student work samples from both the baseline and final activities are submitted in the student's portfolio. This student work is utilized to determine the student's performance level and the level of complexity at which the student is working.

This document provides the curriculum frameworks that bring the prioritized grade-level content standards to life for language arts, mathematics, and science instruction. <u>It is expected that teachers working with students with significant cognitive disabilities will incorporate instruction of all identified competencies at every grade level in the grade span</u>. The alternate assessment tasks will be drawn from clusters and objectives most appropriate for specific individual students and their learning strengths and needs based upon the Data Collection Requirements document that outlines the allowable assessment objectives at each grade level. The learning objectives within each cluster were developed to provide a range of breadth and complexity, so that all students can access and demonstrate learning of each grade-level competency.

There is an overview of the competencies and clusters for each content area at the beginning of each section of this document:

- Language Arts (pages 4-6),
- Mathematics (pages 7-9), and
- Science (pages 10-12).

LANGUAGE ARTS
EXTENDED CURRICULUM FRAMEWORKS

Reading Strand: Students use reading skills and strategies to decode and interpret symbols, words, and larger blocks of text. Students demonstrate the ability to use reading to acquire new information, refine perspectives, respond to the needs and demands of society and the workplace, and provide for personal fulfillment.

Competency 1: **Use word recognition and vocabulary (word meaning) skills and strategies to communicate.**
Cluster 1C. Word Identification, Vocabulary, and Decoding Strategies

Competency 2: Apply strategies and skills to comprehend, respond to, interpret, and evaluate texts.
Cluster 2A. Using Text Features and Text Structures
Cluster 2B. Reading Comprehension

Writing Strand: Students develop a working knowledge of language as well as grammatical structures, diction and usage, punctuation, spelling, layout, and presentation. Students develop the ability to express personal ideas, understandings, desires, and needs in writing.

Competency 3: Express, communicate, evaluate, or exchange ideas effectively.
Cluster 3A. The Writing Process
Cluster 3B. Audience and Purpose
Cluster 3C. Revising and Using Tools

Competency 4: Apply Standard English to communicate.
Cluster 4A. Writing Mechanics

MAAECF ELA – High School		
Reading Strand		
MECF ELA Competencies	**Rating scale item #**	**MECF Objectives/Rating Scale Items**
1. Use word recognition and vocabulary (word meaning) skills and strategies to communicate.	**Cluster 1C. Word Identification and Decoding Strategies**	
	R1C.a	Student recognizes basic content-related words (e.g., bias, habitat, data, probability, percent, election).
	R1C.b	Student completes simple analogies.
	R1C.c	Student applies knowledge of affixes, base words, and roots (e.g., “spec” – inspect, spectator) to determine meaning of words (mis-, -or, -tion, -ist).
	R1C.d	Student interprets and organizes words having shades of meaning.
	R1C.e	Student reads and understands grade-appropriate content vocabulary.
2. Apply strategies and skills to comprehend, respond to, interpret, and evaluate texts.	**Cluster 2A. Using Text Features and Text Structures**	
	R2A.a	Student uses text features (e.g., photo, caption, illustration, charts, maps, map keys, diagrams, graphs) to obtain information.
	R2A.b	Student recognizes signal words/phrases for order (e.g., first, next, last, later) and sequences major events or steps in a process.
	R2A.c	Student recognizes signal words/phrases in texts read or heard orally and identifies cause-effect (e.g., because, this led to); descriptions (e.g., adjectives, definitions, examples); and compares-contrasts ideas or things (e.g., alike/not alike, same/different).
	R2A.d	Student makes inferences from text based on pictures and symbols.
	R2A.e	Student identifies literary and informational text genres and some features of each (e.g., poetry, play, news article).
	Cluster 2B. Reading Comprehension	
	R2B.a	Student reads to compare two people or to compare a location/place at different times in history.
	R2B.b	Student identifies simple stylistic devices (e.g., alliteration, assonance, onomatopoeia, rhyme, rhythm, repetition) in poetry or song lyrics.
	R2B.c	Student uses literary text to identify character traits and character motivation.
	R2B.d	Student compares characters, plots, or setting between two literary texts.
	R2B.e	Student identifies main idea, topic sentence, and supporting details.
	R2B.f	Student identifies and uses figurative language (e.g., metaphor, simile, hyperbole, personifications, oxymoron, imagery).
	R2B.g	Student uses graphic organizer to link text information to a personal experience.
	R2B.h	Student distinguishes between fact and opinion using a variety of media sources.
	R2B.i	Student summarizes an informational text using key ideas and supporting details.
	R2B.j1	Student reads a variety of texts and analyzes author’s purpose (e.g., inform, entertain, persuade).

MAAECF ELA – High School		
Writing Strand		
MECF ELA Competencies	**Rating scale item #**	**MECF Objectives/Rating Scale Items**
3. Express, communicate, evaluate, or exchange ideas effectively.	**Cluster 3A. The Writing Process**	
	W3A.a	Student writes a friendly letter to peers, parents, and others to communicate a message or idea.
	W3A.b	Student develops a business letter that incorporates a clear and focused idea.
	W3A.c	Student identifies a topic of interest and gathers information about it using a variety of resources.
	W3A.d	Student organizes information by topic sentence and supporting details to create a summary, outline, or report.
	W3A.e	Student creates a basic resume.
	W3A.f	Student presents information on a researched topic through Power Point, report, essay, poster, or oral presentation.
	W3A.g	Student conducts a short interview to obtain information on a topic of interest and summarizes information gathered.
	Cluster 3B. Audience and Purpose	
	W3B.a	Student changes formal to informal language or informal to formal language.
	W3B.b	Student uses written communication to inform.
	W3B.c	Student uses written communication to entertain.
	W3B.d	Student uses written communication to persuade.
	W3B.e	Student classifies writing based on its purpose (i.e., informative, entertainment, persuasive, narrative).
	W3B.f	Student identifies bias in different media.
	Cluster 3C. Revising and Using Tools	
	W3C.a	Student edits work to improve subject-verb agreement.
	W3C.b	Student revises work for clarity, coherence, tone, and transitions.
	W3C.c	Student uses a computer or other electronic media to gather information about a topic.
4. Apply Standard English to communicate.	**Cluster 4A. Writing Mechanics**	
	W4A.a	Student sorts sentences as simple, compound, or complex sentences.
	W4A.b	Student recognizes nouns, verbs, and adjectives.
	W4A.c	Student matches adjectives with nouns and adverbs with verbs when composing sentences or phrases.
	W4A.d	Student uses adjectives and adverbs correctly in a variety of sentences.
	~~W4A.e~~	~~Student matches capital letters correctly.~~ **This objective has been omitted, as it was not intended to be a HS writing objective.**
	W4A.f	Student understands and uses contractions.
	W4A.g	Student correctly uses commas, semi colons, or colons.
	W4A.h	Student creates simple, compound, and complex sentences.

MATHEMATICS
EXTENDED CURRICULUM FRAMEWORKS

Number and Operations Strand: Students recognize, represent, understand, and apply mathematical concepts and processes to situations within and outside of school. The definition of Number and Operations includes a range of skills including: rote counting; using pictures, objects, and symbols to denote meaning from numbers and quantities; and demonstrating an understanding of numbers as quantities that can be added, subtracted, multiplied, and divided.

Competency 1: **Understand relationships among numbers and basic operations. Compute fluently and make reasonable estimates.**

Cluster 1B. Operations
Cluster 1C. Fractions, Decimals, and Percentages

Algebra Strand: Students will use symbolic forms to represent, model, and demonstrate understanding of mathematical situations and apply mathematical concepts and processes to situations within and outside of school. Patterns, Functions, and Algebra include such skills as discrimination, sorting, matching, and sequencing.

Competency 2: **Explain, analyze, and generate patterns, relationships, and functions using numerals, symbols, words, and/or manipulatives.**

Cluster 2A. Pattern Analysis
Cluster 2B. Functions and Relationships
Cluster 2C. Algebraic Procedures

Measurement Strand: Students use a variety of tools and techniques of measurement to problem solve. Measurement includes a demonstrated understanding of such concepts as time, distance, area and volume, applied for a variety of purposes and to a variety of situations. At a lower level, measurement is being broadly defined to include the concept of more than, less than, and other comparatives.

Competency 4: **Understand and use different forms and units of measurement in a variety of contexts.**

Cluster 4B. Measuring Objects and Using Information

Data Analysis and Probability Strand: Students will interpret data and make predictions using methods of exploratory data analysis and basic notions of probability. Data Analysis and Probability includes categorization, making choices, and logical reasoning about events or situations.

Competency 5: **Collect and report data. Read and understand basic charts, graphs, and tables.**

Cluster 5A. Collecting and Reporting Data
Cluster 5B. Probability

MAAECF Mathematics – High School		
Numbers and Operations Strand		
MECF Mathematics Competencies	**Rating scale item #**	**MECF Objectives/Rating Scale Items**
1. Understand relationships among numbers and basic operations. Compute fluently and make reasonable estimates.	**Cluster 1B. Operations**	
	MN1B.a	Student demonstrates the commutative and associative properties of addition and multiplication.
	MN1B.a1	Student solves real-world problems (or word problems) using the commutative and associative properties of addition and multiplication.
	MN1B.b	Student simplifies an expression using order of operations (e.g. (5-3)3 (2)3 6 2x3+6 6+6 12).
	MN1B.c	Student adds whole number matrices.
	MN1B.d1	Student locates and uses the following symbols accurately on a calculator: +, –, ×, ÷, π, and =.
	Cluster 1C. Fractions, Decimals, and Percentages	
	MN1C.a	Student computes total cost, including the tip and/or sales tax on a given item.
	MN1C.a1	Student calculates total cost, including the tip and sales tax, using a calculator.
	MN1C.b	Student identifies the components of a specified formula (e.g., interest formula: principle, rate, time).
Algebra Strand		
2. Explain, analyze, and generate patterns, relationships, and functions using numerals, symbols, words, and/or manipulatives.	**Cluster 2A. Pattern Analysis**	
	MA2A.a	Student identifies and extends patterns of numbers using an *x*/*y* chart.
	MA2A.b	Student matches a generalized rule or description to numerical and geometric patterns.
	Cluster 2B. Functions and Relationships	
	MA2B.a	Student locates points on maps and grids.
	MA2B.b	Student identifies where a line crosses the *x* axis (*x*-intercept) and the *y* axis (*y*-intercept) given the graph.
	MA2B.c	Student identifies parallel and intersecting lines by comparing slopes of equations already in slope intercept form ($y=mx+b$, m represents slope).
	MA2B.d	Given a simple linear equation and a completed T-chart, student graphs the results.
	Cluster 2C. Algebraic Procedures	
	MA2C.a	Student simplifies an algebraic expression, including like terms (e.g., $2x + x + 3$, $3x + 3$).
	MA2C.b	Student evaluates simple algebraic expressions using whole number values (e.g., $2x + 3$, when $x = 5$ 2(5) + 3 10 + 3 13).
	MA2C.c	Student solves simple linear equations with variable on one side of an equation (e.g., $4n = 12$), using whole numbers, fractions, and decimals.

MAAECF Mathematics – High School		
Measurement Strand		
MECF Mathematics Competencies	**Rating scale item #**	**MECF Objectives/Rating Scale Items**
4. Understand and use different forms and units of measurement in a variety of contexts.	**Cluster 4B. Measuring Objects and Using Information**	
	MM4B.a	Student distinguishes between concepts of more than or less than as it relates to graphing an inequality.
	MM4B.b	Student recognizes or identifies the circumference, diameter, and radius of a circle.
	MM4B.b1	Student calculates the circumference of circles given the formula with either the radius or the diameter of a circle.
	MM4B.b2	Student calculates the circumference of circles given the formula with either the radius or the diameter of a circle, using a calculator.
	MM4B.c	Student computes perimeter and area of polygons and circles using a formula or rule.
	MM4B.d	Student computes surface area of 3-D figures.
	MM4B.e	Student determines volume of a rectangular prism.
Data Analysis and Probability Strand		
5. Collect and report data. Read and understand basic charts, graphs, and tables.	**Cluster 5A. Collecting and Reporting Data**	
	MD5A.a	Student interprets a scatter plot in relation to the correlation shown.
	MD5A.b	Student creates a scatter plot graph from given data.
	Cluster 5B. Probability	
	MD5B.a	Student uses basic probability concepts to make predictions about an event.
	MD5B.b	Student explains terms *always*, *sometimes*, and *never* as it relates to a probability event.
	MD5B.c	Student conducts an investigation of probability and records the results.

SCIENCE
EXTENDED CURRICULUM FRAMEWORKS

Inquiry Strand

Competency 1: **Use tools and instruments to plan, conduct, and evaluate simple science experiments.**

Cluster 1A. Conducts Experiment
Cluster 1B. Interprets Data
Cluster 1C. Communicates Findings

Life Science Strand

Competency 4: Identify and describe animals and plants and their environments.

Cluster 4A. Plants and Animals: Living Organisms and Adaptation
Cluster 4C. Interdependence and Interactions

Competency 5: Identify and describe structures of living systems and their functions.

Cluster 5A. Structures of Living Systems: Cells
Cluster 5B. Structures of Living Systems: Heredity

MAAECF Science – High School		
Inquiry Strand		
MECF Science Competencies	**Rating scale item #**	**MECF Objectives/Rating Scale Items**
1. Use tools and instruments to plan, conduct, and evaluate simple science experiments.	**Cluster 1A. Conducts Experiment**	
	SI1A.a	Student observes and practices safe procedures in the classroom and the laboratory.
	SI1A.b	Student demonstrates proper use and care of equipment in the laboratory and classrooms (e.g., microscope, balance scale, beaker).
	SI1A.c	Student conducts a simple experiment to address a question or problem.
	SI1A.c1	Student distinguishes independent variables from dependent variables in scientific experiments.
	SI1A.c2	Student distinguishes control groups from experimental groups in scientific experiments.
	SI1A.d	Given a testable question, student uses the scientific method to answer the question (make prediction/hypothesis, choose or plan steps to investigate, collect data, and report data).
	Cluster 1B. Interprets Data	
	SI1B.a	Student uses observations and prior experiences to make predictions or state a hypothesis.
	SI1B.b	Student organizes data collected in order to communicate findings (e.g., labels a drawing or diagram, organizes data in a T-chart so it can be graphed).
	Cluster 1C. Communicates Findings	
	SI1C.a	Student communicates the results of an investigation using appropriate science vocabulary.
	SI1C.b	Student develops a graph, chart, or other visual representation to communicate the results of a science investigation.
	SI1C.c	Student uses results of an experiment to draw conclusions that prove or disprove a prediction/hypothesis.
Life Science Strand		
4. Identify and describe animals and plants and their environments.	**Cluster 4A. Plants and Animals: Living Organisms and Adaptation**	
	SL4A.a	Student compares adaptations (e.g., protective coloration; beak types in birds) of animals in land-based and water-based ecosystems.
	SL4A.b	Student explains why animals belong to different classification groups or subgroups using similarities and differences (e.g., warm-blooded/cold-blooded; bird/fish/mammal/reptile/amphibian).
	SL4A.c	Student explains why plants belong to different classification groups or subgroups using similarities and differences (e.g., seed/seedless; vascular/nonvascular; gymnosperm/angiosperm).
	SL4A.d	Student compares adaptations (e.g., how seeds travel; storing water; root types) of plants in land-based and water-based ecosystems.
	SL4A.e	Students describe the basic process used by plants to make their own food (photosynthesis: energy comes from the sun; raw materials are carbon dioxide and water; products are food/sugar and oxygen).
	SL4A.f	Students describe how organisms release energy from food (raw materials are food and oxygen; products released are carbon dioxide and water).

MAAECF Science – High School		
Life Science Strand		
MECF Science Competencies	**Rating scale item #**	**MECF Objectives/Rating Scale Items**
4. Identify and describe animals and plants and their environments. (continued)	**Cluster 4C. Interdependence and Interactions**	
	SL4C.a	Student uses a food chain or food web to explain the flow of energy.
	SL4C.b	Students use a food web or food chain to describe relationships in different aquatic and land-based ecosystems (consumer/producer/ decomposer; predator/prey).
	SL4C.c	Student uses a teacher demonstration, model, or diagram to create a diagram showing the carbon-oxygen cycle in an ecosystem.
5. Identify and describe structures of living systems and their functions.	**Cluster 5A. Structures of Living Systems: Cells**	
	SL5A.a	Student identifies the cell as the "basic unit of structure and function in living things."
	SL5A.b	Student identifies parts of animal and plant cells.
	SL5A.c	Student compares parts of animal and plant cells and explains differences and similarities.
	SL5A.d	Students use tools (e.g., microscope, viewer) or visuals to examine and identify unicellular and multi-cellular organisms.
	Cluster 5B. Structures of Living Systems: Heredity	
	SL5B.a	Student recognizes that traits are passed from parent to offspring and shared by members of a family (e.g., eye color, skin color, earlobes, rolled tongue).
	SL5B.a1	Student distinguishes between asexual and sexual reproduction.
	SL5B.b	Student distinguishes between traits passed on from parents and behaviors that are learned.
	SL5B.c	Use models (e.g., punnet square) to predict possible offspring traits given the genetic makeup of parents.

References

Individuals with Disabilities Education Act, 20 U.S.C. § 1400 *et seq., as amended by* the Individuals with Disabilities Education Act Amendments of 1997, Pub. L. No. 105-17, 111 Stat. 37 (1997).

Flowers, C., Browder, D., Wakeman, S., & Karvonen, M. (2007). "Links for Academic Learning: The Conceptual Framework." National Alternate Assessment Center (NAAC) and the University of North Carolina at Charlotte.

McDonnell, L. M, McLaughlin, M. J., & Morison, P. (Eds.). (1997). *Educating one and all: Students with disabilities and standards-based reform.* Washington, DC: National Academy Press.

No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 Stat. 1425 (2002).

Thompson, S.J., Johnstone, C.J., & Thurlow, M.L. (2002). *Universal design applied to large-scale assessments (Synthesis Report 44)*. Minneapolis, MN: University of Minnesota, National Center for Educational Outcomes.

Webb, N. L. (1997). *Criteria for alignment of expectations and assessments in mathematics and science education* (NISE Research Monograph No. 6). Madison: University of Wisconsin-Madison, National Institute for Science Education.

Additional Resources for Alternate Assessments & Making Materials More Accessible

DC CAS Alt/District of Columbia Alternate Assessment. [Online] Available: http://www.ihdi.uky.edu/ilssa/dc-cas-alt/ or http://www.ihdi.uky.edu/ilssa/dc-cas-alt/teacherResources/Default.asp *(online alternate assessment resources for teachers and parents)*

Denham, A. (2004). Pathways to Learning for Students with Cognitive Challenges: Reading, Writing, and Presenting. Human Development Institute. University of Kentucky. [Online] Available: http://www.ihdi.uky.edu/IEI/Files/Pathways%20to%20learning%20document.pdf *(ideas for expressive and receptive adaptations to accommodate diverse learning styles)*

Fichleay, K. and Dubuske, S. (2003). Adapting Books Assistive Technology Continuum. Boston Public Schools Access Technology Center. [Online] Available: http://www.boston.k12.ma.us/teach/technology/emmanuel/ATAdaptBks.pdf (*ideas for adapting text to accommodate diverse learning styles)*

GA Alternate Assessment. [Online] Available: http://www.georgiastandards.org/impairment.aspx - *(Teacher Resource Guide, sample modified texts for ELA, sample assessment activities for mathematics, ELA, science, and social studies)*

Hess, K. (2008). "Tools & Strategies for Developing and Using Learning Progressions." Presentation at the FAST-SCASS meeting, Atlanta, GA 2/6/08 [online] PowerPoint and article available: www.nciea.org

Hess, K. (2008). "Teaching and Assessing Understanding of Text Structures across Grades." [online] available: www.nciea.org

MA Alternate Assessment Teacher Resource Guide. [Online] Available: http://www.doe.mass.edu/mcas/alt/resources.html *(online alternate assessment resources for teachers)*

NJ Alternate Assessment/APA. [Online] Available: http://pem.ncspearson.com/nj/apa *(online alternate assessment resources for teachers)*

Pro Teacher website for Hands-on Science Activities. [Online] Available: http://www.proteacher.com/cgi-bin/outsidesite.cgi?id=274&external=http://www.energyquest.ca.gov/projects/index.html&original=http://www.proteacher.com/110053.shtml&title=Energy%20Science%20Projects *(online resources for teaching science)*

Science Saurus: A Student Handbook **–** teacher or student resource for looking up science concepts, examples, and diagrams**.** Great Source Education Group, Houghton Mifflin Company ISBN# 0-669-48192-0 6/8

The Internet Picture Dictionary. (2003). [Online] Available: www.pdictionary.com (*picture dictionary available in several languages which can be used to make worksheets, games, etc.)*

Texas School for the Blind. (undated). Functional Academics and Functional Skills Department. [Online] Available: http://www.tsbvi.edu (*ideas and materials for adapting academic content for students with visual impairments*)

Utah State University. (2003). National Library of Virtual Manipulatives [Online] Available: http://www.matti.usu.edu/nlvm/nav/topic_t_2.html (*virtual manipulatives that can be arranged online to solve or illustrate math problems – includes measurement, geometry ,and algebra)*

What do we mean by “reading” for the MS Alternate Assessment?

Students who have significant cognitive disabilities may be accessing and responding to information in a different way than typical students. For students taking the alternate assessment, “reading” may be defined as follows:

Student listens *and follows* along with text	Romeo and Juliet fell in love.	http://bookbuilder.cast.org/
Student listens *and follows* along with pictures		http://www.ric.edu/sherlockcenter/dsi/romeo.pdf
Student listens *and follows* along with objects	Romeo and Juliet fell in love.	Denham, A. (2004). Pathways to Learning for Students with Cognitive Challenges: Reading, Writing and Presenting. Interdisciplinary Human Development Institute, University of Kentucky. [Online] Available: http://www.ihdi.uky.edu/IEI/
Student listens *and follows* along with tactile cues	Romeo and Juliet fell in love.	http://www.tsbvi.edu/Education/vmi/images/love.jpg

The grade-appropriate texts may be adapted by:

- Condensing information
- Shortening the text
- Presenting a synopsis of the text
- Highlighting important information
- Pairing text with pictures, objects, or tactile cues
    - When pairing text with pictures it may be a one-to-one correspondence (one picture for each word) or it may be one picture that summarizes the text
- Translating the text to Braille
- Chunking relevant information
- Creating a story bag that corresponds to the text (using representative objects for main characters/ideas from the text)
- Rewriting using different vocabulary

What do we mean by “writing” for MS Alternate Assessment?

Students who have significant cognitive disabilities may be accessing and responding to information in a different way than typical students. For students taking the alternate assessment, “writing” may be defined as the ordering of information and representing a complete thought. For some students, representing a complete thought is done on a word-by-word basis; for other students, it may be represented more holistically by an object or picture. Students may write by:

- Using stamps
- Using pictures
- Using objects
- Using written words
- Using Braille
- Using tactile cues
- Using a voice output device or other augmentative communication devices (e.g., to complete a cloze sentence, choose main ideas and/or supporting details to write a text)
- Ordering sentences (words, objects, pictures, tactile cues) into an essay
- Completing cloze sentences
- Using a computer with writing software (speech to text, picture writing, etc.)
- Using a pen, pencil, or other writing utensil