

READING FLUENCY DISORDER
WHAT IS IT, HOW DO I IDENTIFY IT,
AND WHY IS IT IMPORTANT?

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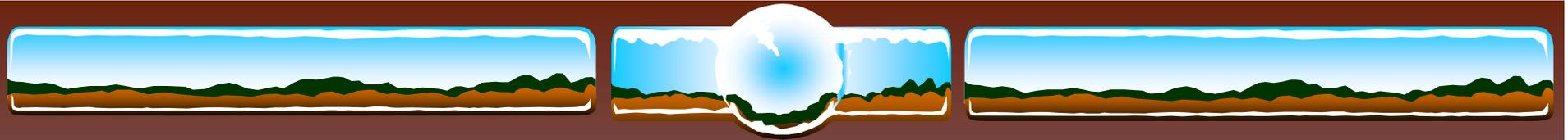
Literacy, reading disorder, dyslexia?

- ❖ Literacy – “individual’s ability to read, write, and speak in English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one’s goals, and to develop one’s knowledge and potential”
(National Literacy Act of 1991)
- ❖ Dyslexia – An impairment in the ability to read



National Reading Panel

- ❖ An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction
- ❖ Congressional charge in 1997 to “convene a national panel to assess the status of research-based knowledge, including the effectiveness of various approaches to teaching children to read.
- ❖ Report in 2000
- ❖ NIH Pub. No. 00-4754
- ❖ www.nifl.gov



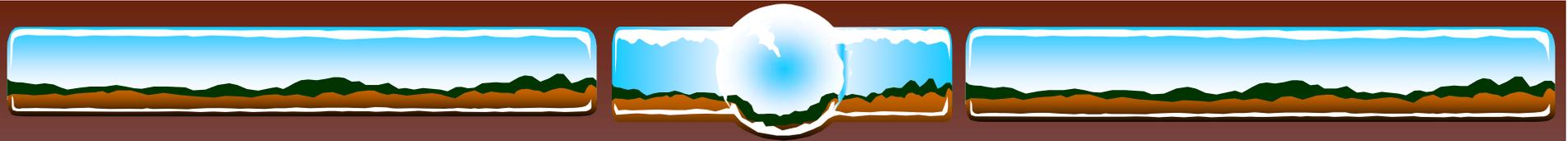
National Reading Panel

- ❖ Identified three main areas for report:
- ❖ **Alphabetic**
 - ❖ **Phonemic Awareness**
 - ❖ **Phonics**
- ❖ **Fluency**
- ❖ **Comprehension**
 - ❖ **Vocabulary**
 - ❖ **Text Comprehension**



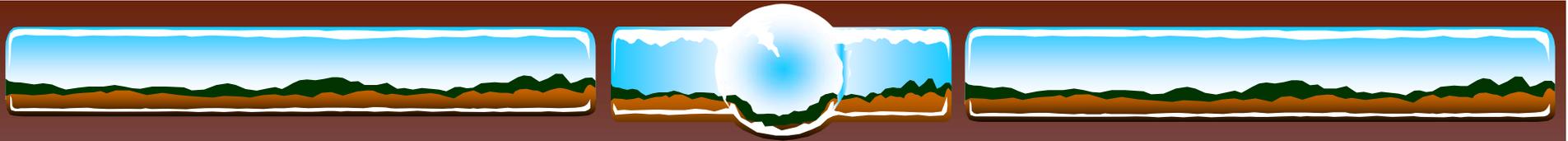
Phonemic Awareness

- ❖ Ability to focus on and manipulate phonemes in spoken words. Some of the tasks commonly used:
 - ❖ Phoneme isolation/identification: Tell me the first sound in the word car
 - ❖ Phoneme identity: Tell me the sound that is the same in dog, door, and dime.
 - ❖ Phoneme categorization: Which word does not belong bug, boy, sit.



Phonemic Awareness

- ❖ Ability to focus on and manipulate phonemes in spoken words
 - ❖ Phoneme blending: What is this word /s/ /p//i/ /n/
 - ❖ Phoneme segmentation: How many sounds in the word break
 - ❖ Tapping or counting
 - ❖ Pronouncing sound by sound
 - ❖ Phoneme deletion: Say slip without the l



Phonemic awareness development continuum

- ❖ Rhyming songs
- ❖ Sentence segmentation
- ❖ Syllable segmentation and blending
- ❖ Onset-rime, blending & segmentation
- ❖ Blending & segmenting individual phonemes
 - ❖ (Chard, Dickson, 1999)



Phonological or phonemic awareness?

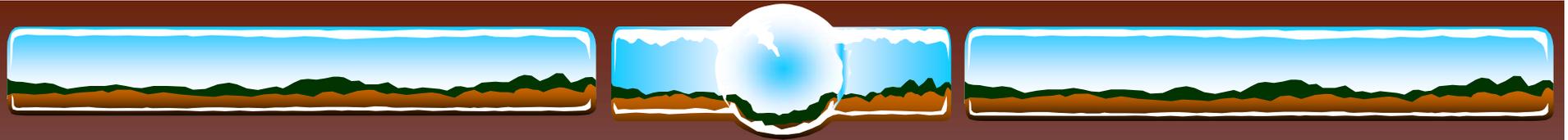
❖ Phonological Awareness

- ❖ Awareness of words, syllables, or phonemes

❖ Phonemic Awareness

- ❖ Awareness of individual sounds

- ❖ Terms often used interchangeably



A word about phonics

- ❖ Systematic phonics instruction
- ❖ Teaches reading by stressing acquisition of letter-sound correspondences
- ❖ Teaches how letter-sound relationships are important for reading and spelling



Fluency

❖ Fluent readers read text

- ❖ Speed
- ❖ Accuracy
- ❖ Proper expression

❖ Non-fluent readers

- ❖ Sound out words, but very slowly
- ❖ Don't recognize familiar sight words
- ❖ Sound stiff and without expression
- ❖ Insert words, omit words, misread small words



Fluency

- ❖ Fluent readers described as having:
 - ❖ “lack of trouble with word identification or comprehension” (Leu and Kinzer, 1987)
 - ❖ “freedom from word identification problems” (Harris & Hodges, 1981)
 - ❖ Ability to group words appropriately into meaningful grammatical units for interpretation (Schreiber, 1980, 1987)
 - ❖ Rapid use of punctuation and determination of where to place emphasis or pause to make sense of text



Fluency

- ❖ Fluency involves:
 - ❖ Not only automatic word recognition, but the ability to attend to prosodic features (rhythm, intonation and phrasing) (Hook & Jones, 2002)
 - ❖ Anticipation of what comes next in the text – anticipation facilitates reaction time and aids comprehension (Wood, Flowers & Grigorenko, 2001)



Fluency

- ❖ Often neglected in classroom
- ❖ National Assessment of Educational Progress (Pinnell et al, 1995)
- ❖ 44% of 4th graders were dysfluent even with grade-level stories that the students had read under supportive conditions
- ❖ Close relationship between fluency and reading comprehension



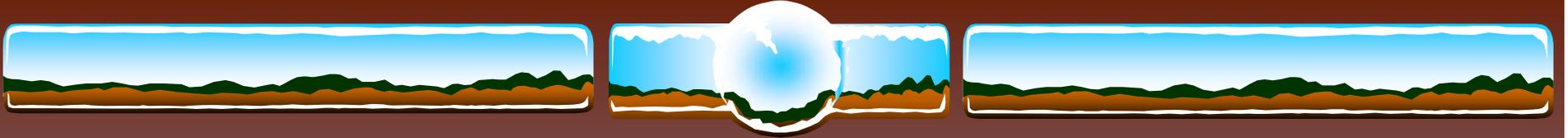
Fluency

- ❖ Fluent reading achieved only when all levels of visual to semantic decoding occur automatically (LaBerge & Samuels, 1974)
- ❖ As students develop skill in reading, attention is focused on larger and larger units...when fluent, the focus is the whole word (Samuels, 1992)



Fluency

- ❖ “Hallmark of fluent reading is the ability to decode and comprehend at the same time.” (Samuels, 1992)



Fluency and automaticity

- ❖ Terms often used synonymously
- ❖ Some suggest automaticity should describe word-level recognition
- ❖ Automaticity
 - ❖ Processing of complex information that ordinarily requires long periods of training before it can be done with little attention



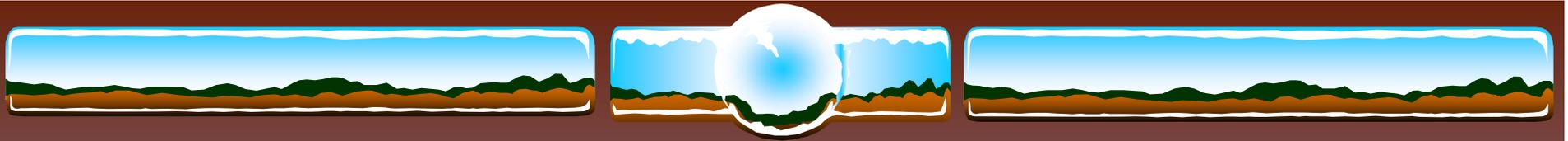
Automaticity

- ❖ Behavior carried out without immediate attention
- ❖ Without conscious awareness
- ❖ Without interfering with other processes that are occurring at the same time (Posner & Snyder, 1975)
- ❖ Acquired gradually as result of extended practice
- ❖ Once activated processes continue to completion because they are difficult to suppress (Shiffrin & Schneider, 1977)



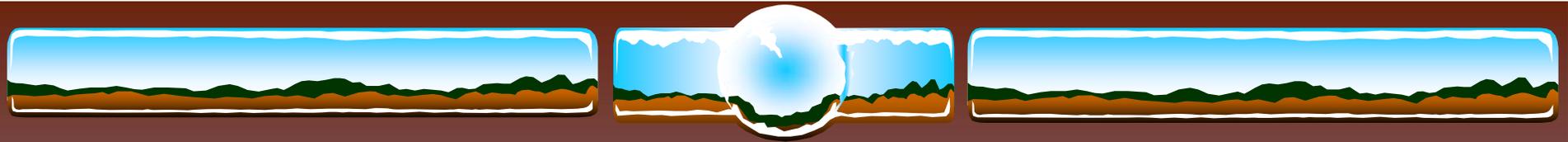
Automaticity

- ❖ Processes should not be considered binary opposite properties (i.e. either automatic or not)
- ❖ Viewed as a continuum rather than a dichotomy (Logan, 1997)



Automaticity and fluency

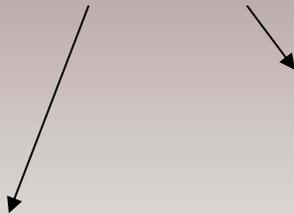
- ❖ If automaticity is used to describe quick, automatic recognition of word level stimuli
- ❖ Then fluency is used to describe reading in connected text – accurate and quick



Mental energy and fluency

❖ Non-fluent reader

❖ Mental effort



❖ Decoding

Comprehension

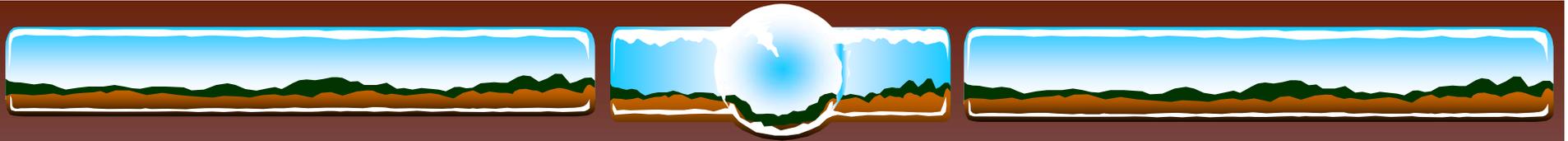
❖ Fluent reader

❖ Mental effort



❖ Decoding

Comprehension



The double-deficit hypothesis

- ❖ Wolf & Bowers (1993, 1999)
- ❖ Long held belief that a “core deficit in phonological processes impedes the acquisition of word recognition skills, which, in turn, impedes the acquisition of fluent reading” ... i.e. phonological process deficit thought to cause non-fluent reading
 - ❖ THEN.....
- ❖ “Many severely impaired readers have naming-speed deficits...in the processes underlying rapid recognition and retrieval of visually presented linguistic stimuli”



Double-deficit hypothesis

- ❖ Naming speed deficit was not part of impaired phonological processes, but that these were “separable sources of reading dysfunction, and their combined presence leads to profound reading impairment”.



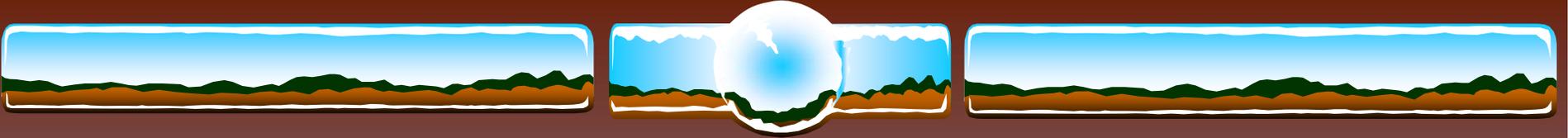
Is there other evidence that this theory is correct?

- ❖ Rapid letter naming helps predict word identification, prose passage speed and accuracy scores
 - ❖ Cornwall, 1992
- ❖ RAN most strongly predictive of accuracy and latency measures of orthographic and semantic processing....
 - ❖ Manis & Freedman, 2001



Is there other evidence that this theory is correct?

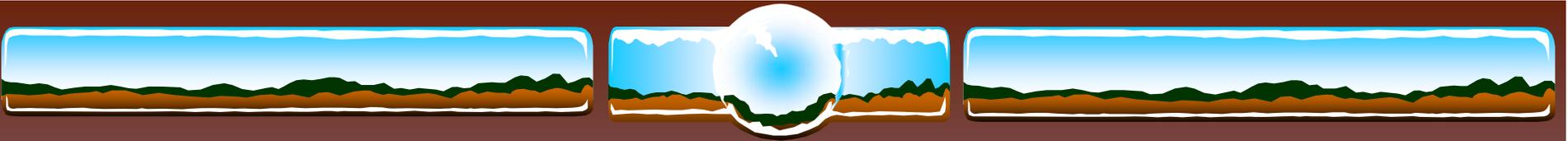
- ❖ Naming speed contributes to measures of orthographic skill
- ❖ Phonemic awareness contributes to non-word decoding
 - ❖ Manis, Doi & Bhada, 2000
- ❖ Naming speed deficit may predict not only reading disabilities, but broader forms of learning disabilities
 - ❖ Berninger, Abbott, Billingsley & Nagy, 2001; Waber, 2001



What skills might be needed to complete

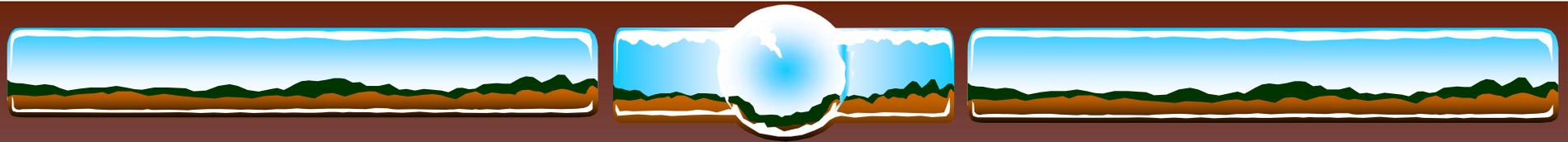
RAN? (Wolf & Bowers)

- ❖ Attention to stimulus
- ❖ Visually processing to detect, discriminate and identify
- ❖ Integrating visual features with the orthographic pattern stored in memory
- ❖ Integrating visual features with phonological representation
- ❖ Retrieving phonological label
- ❖ Integrating semantic and conceptual information
- ❖ Activating a motor response



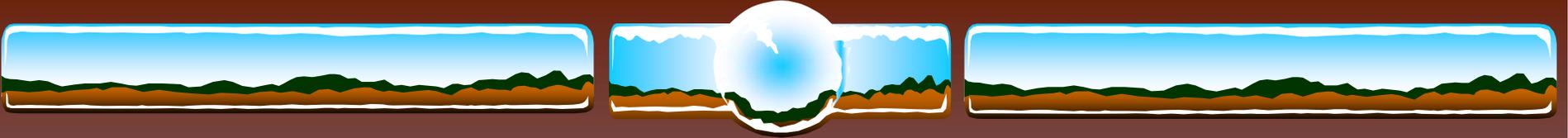
How would impairment in these skills result in slow reading?

- ❖ May impede connections between phonemes and orthographic patterns, at word or sub-word levels
- ❖ May limit quality of orthographic codes stored in memory
- ❖ May require increasing practice before adequate connections are made



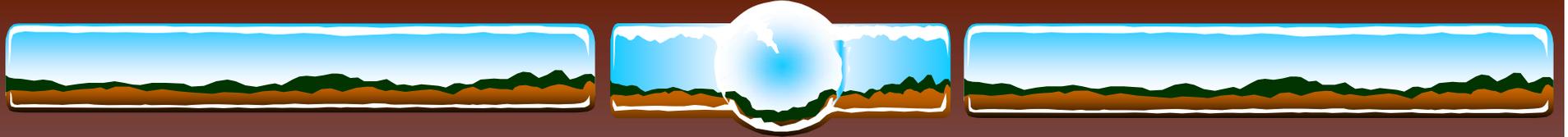
A side note...

- ❖ Kids identified with rapid naming deficits don't need to be trained to name things rapidly
- ❖ No evidence that this will transfer to fluent reading
- ❖ More later on what should be taught



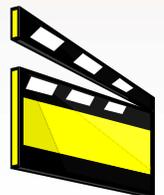
Are there different types of non-fluent readers?

- ❖ Three subtypes
- ❖ Different processes may be contributing to slow oral reading
- ❖ Different brain locus for each of types
 - ❖ Berninger, et al, 2001)



Types of non-fluent readers

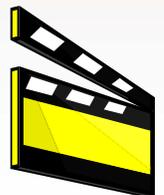
- Processing rate/efficiency of system
 - ❖ Reading accurate, but painfully slow
 - ❖ Rarely make errors
 - ❖ Often not identified by schools
 - ❖ Can't keep up with assignments
 - ❖ Brain locus: cerebellum –
 - ❖ control of precise timing

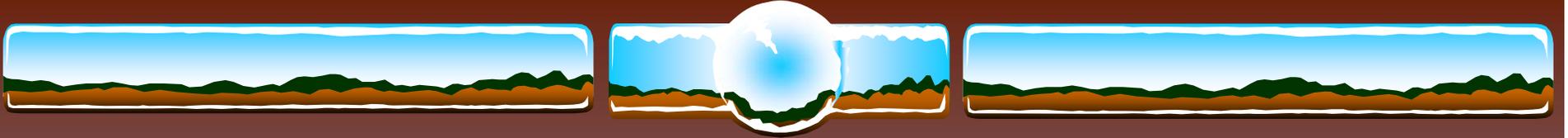




Types of non-fluent readers

- ❖ Automaticity of processing
 - ❖ Oral reading inaccurate and slow
 - ❖ Errors: false starts, hesitations, filled pauses and repetitions
 - ❖ Adequate phonological awareness skills, but not at automatic level
 - ❖ Self-monitors and self-corrects
 - ❖ Executive functions intact
 - ❖ Brain locus striatum and/or insula

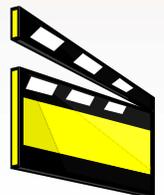


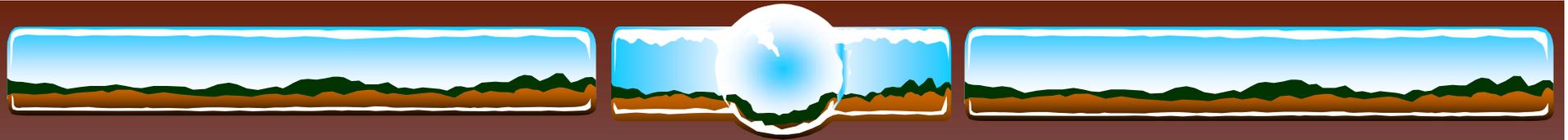


Types of non-fluent readers

- ❖ Executive Coordination
 - ❖ Oral reading inaccurate and slow
 - ❖ Rarely self-corrected
 - ❖ Error pattern showed inattention to:
 - ❖ orthographic and morphological features of words
 - ❖ serial order of words in sentences
 - ❖ prosody of language
 - ❖ self-monitoring of meaning

- ❖ Brain locus: left frontal





Scoring Guide for Fluency and Expression (Hoyt 2000)

- ❖ Described three levels of fluency and expression
- ❖ Can score the child between levels if needed
- ❖ Found in: Snapshots (Heinemann)



What's the most current description of fluency?

(Wolf and Katzir-Cohen, 2001)

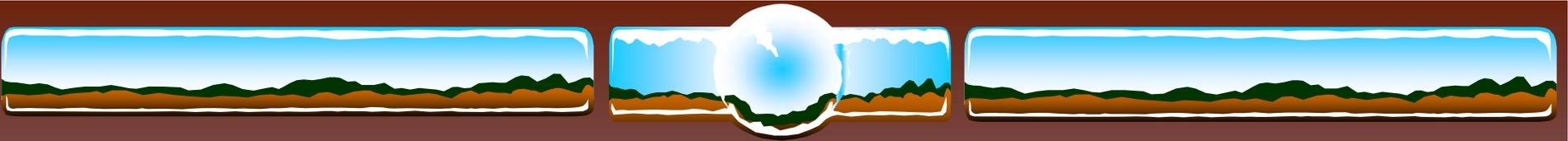
- ❖ “In its beginnings, reading fluency is the product of the initial development of accuracy and the subsequent development of automaticity.....
- ❖ In underlying sublexical processes, lexical processes, and their integration in single-word reading and connected text.



What's the most current description of fluency?

(Wolf and Katzir-Cohen, 2001)

- ❖ “These include perceptual, phonological, orthographic, and morphological processes at the
- ❖ Letter, letter-pattern, and word levels, as well as semantic and syntactic processes at the word level and connected text level....



What's the most current description of fluency?

(Wolf and Katzir-Cohen, 2001)

“After it is fully developed, reading fluency refers to a level of accuracy and rate where decoding is relatively effortless...

❖ where oral reading is smooth and accurate with correct prosody, and where attention can be allocated to comprehension.”