

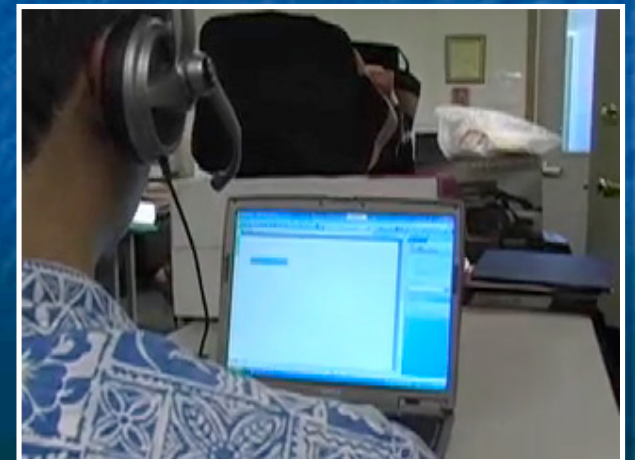
What is Assistive Technology and How Can It Help Students?

An Instructional Module Addressing Language-Processing Differences for Future Educators

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Master's
Presentation

May 2, 2007



Learning Disabilities

➤ From 1977 to 1999

- ✓ Students identified as learning disabled doubled to over 2.8 million
- ✓ Represents over half of all students with disabilities

- Hallahan and Mercer (2001)

BUT, this amount only includes students that have been diagnosed.

Learning Disabilities

➤ Language Processing Disorders

✓ Sub-set of learning disabilities

- Dyslexia (receptive and expressive language)
- Dyscalculia (math facts, time and money)
- Dysgraphia (organizing ideas, handwriting)
- Dyspraxia (fine motor skills and coordination)
- Auditory processing disorder (language development)
- Visual processing disorder (reading, writing and math)

– Miller, 1998

Assistive Technology

- Assistive technology in use for decades
- Key Moment -
The Technology-Related Assistance for Individuals With Disabilities Act (1994)

The “Tech Act” defined assistive technology as any item, piece of equipment, or product system that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.

The Technology-Related Assistance for Individuals With Disabilities Act Amendments of 1994, Pub. L. No. 100-407, §3, A (1994)

Assistive Technology - Re-Defined

~~Assistive technology is any item, piece of equipment, piece of equipment that is used to compensate for, or remediate the functional capabilities of an individual's learning strengths and weaknesses.~~

The "Tech Act" defined assistive technology as any item, piece of equipment, or product system that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.

Assistive technology can benefit ALL learners.

The Technology-Related Assistance for Individuals With Disabilities Act Amendments of 1994, Pub. L. No. 100-407, §3, A (1994)

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Assistive Technology

- Two teaching approaches
 - ✓ Remedial Approach
 - Improve areas of deficiency
 - Typing tutor - practice skills
 - ✓ Compensatory Approach
 - Circumvents deficits
 - Speech-to-text software - weakness in hand/eye coordination

Compensatory Approach

- Four types for reading and writing



Writing Aids



Speech to Text (ViaVoice)



Text to Speech (Kurzweil)



Organizational Tools (Inspiration)

Future Educators

- A great point to start -
 - ✓ “... few teachers are adequately prepared to use technology themselves or to help students use technology in the classroom. Thus, we need to enhance present technology preservice to further integrate technology in today’s schools.”
 - Smith and Robinson, 2003, p. 154
- The key is to train future educators

Online Module?

- Access anywhere by anyone
- Interactive

“Teachers, administrators, and parents are in desperate need of easy-to-use decision-making tools that help them identify categories of products that may be useful for individual or groups of struggling students.”

- Edyburn, 2003, p. 22

Methodology

- Online Instructional Module
- Goals:
 - ✓ Define assistive technology (compensatory and remedial)
 - ✓ Understand tools for reading and writing
 - ✓ Learn more about learning disabilities
 - ✓ Match tools to learning strengths and weaknesses
(Key - these are suggestions!)
- Target Population - future educators
- Sample Population - future educators at a university in the western region of the United States

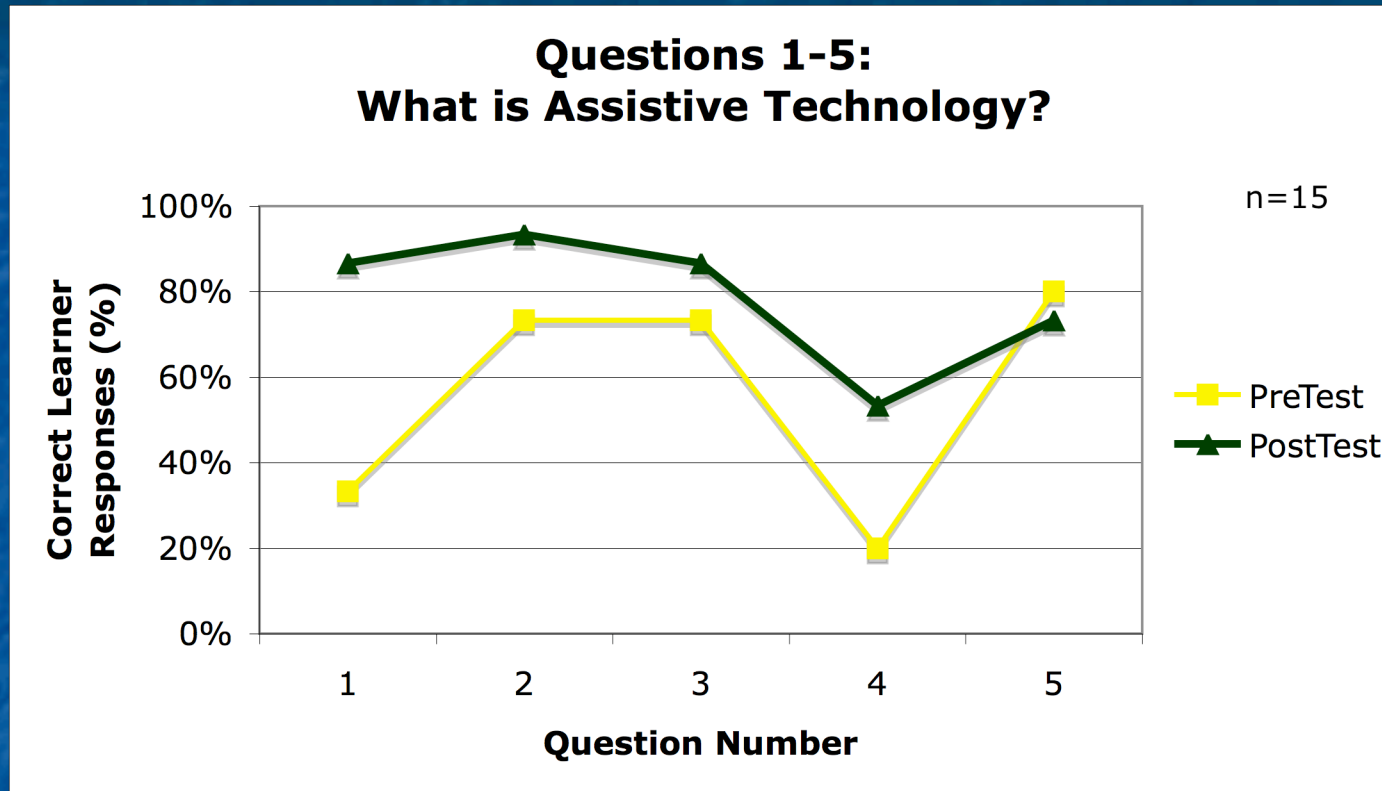
Let's Look at the Module!

<http://www.travis-family.com/mike/atmodule>

Testing done

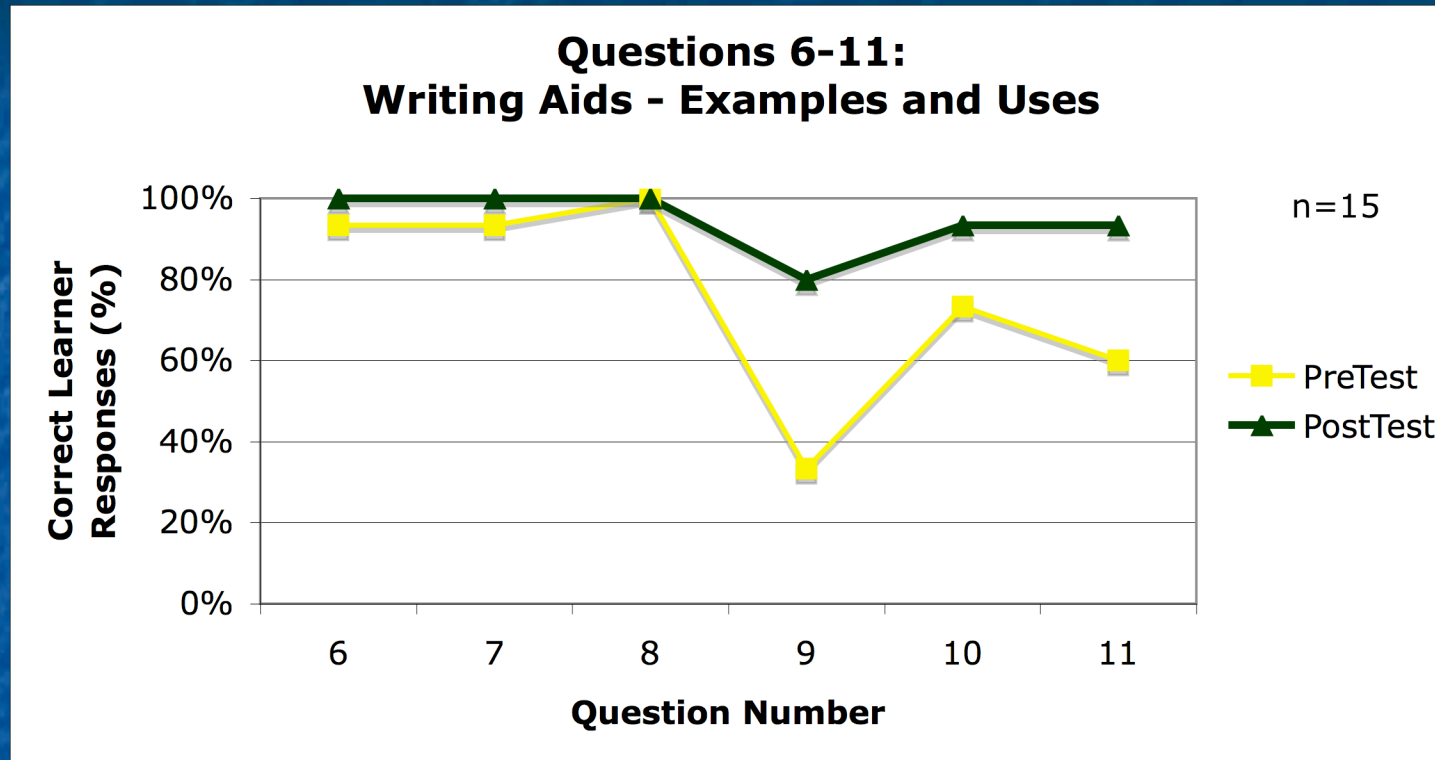
- One-on-one testing (3 learners) - Oct, 2006
- Small group testing (15 learners) - Nov, 2006
 - ✓ 11 Education Majors, 11 Female / 4 Male
 - ✓ Prior experience with AT - 12 (none to basic)
 - ✓ Prior experience with LD - 11 (none to basic)
 - ✓ Average Testing Time - 56 minutes total
- Additional reviews - ETEC 688

Assistive Technology



- 1) Define AT
- 2) Define compensatory approach
- 3) Define remedial approach
- 4) Pick example of compensatory
- 5) Pick example of remedial

Writing Aids



6) Writing aid

7) Use of pencil grips

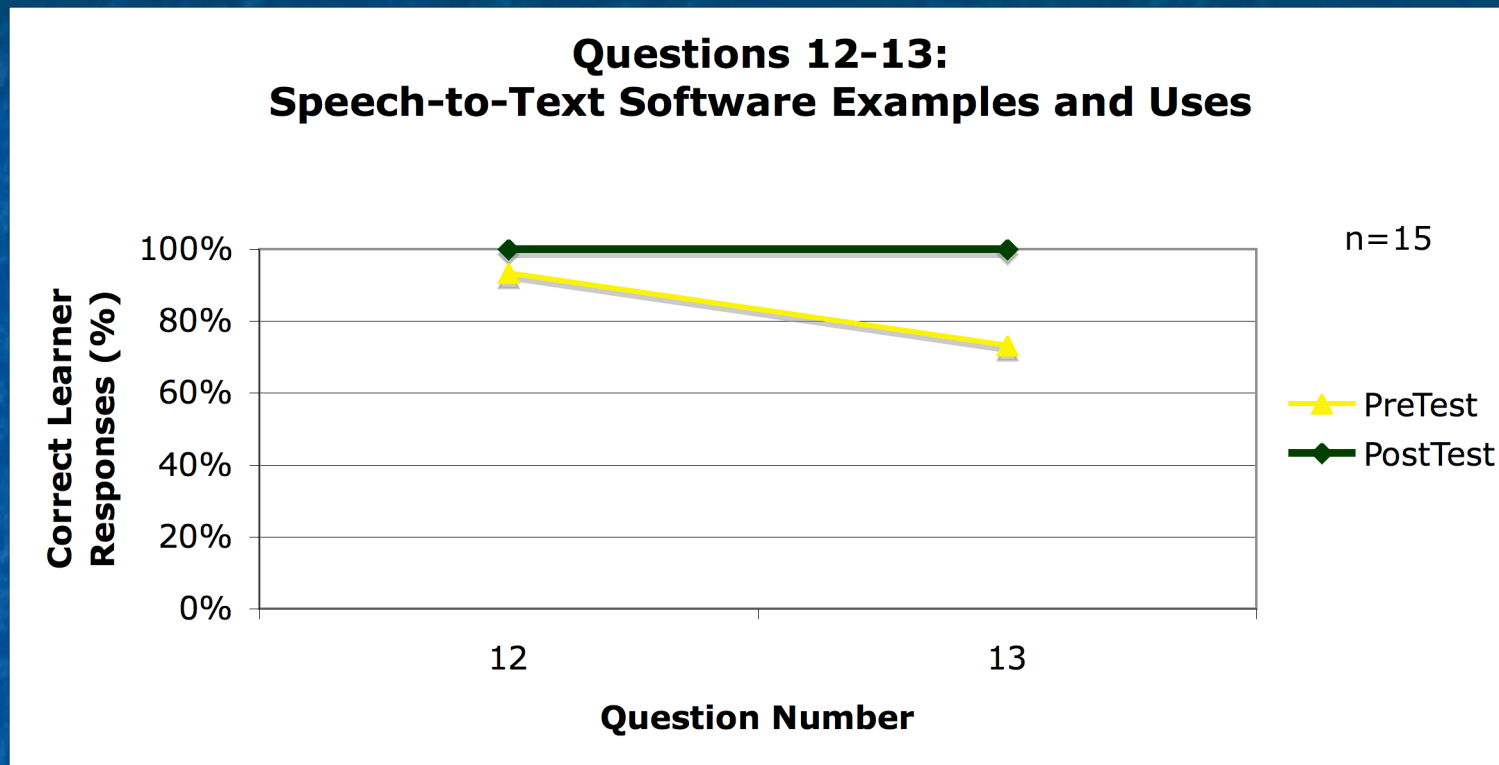
8) Use of raised paper

9) What can computer spellers do?

10) What can word prediction do?

11) Match writing aid to student learning

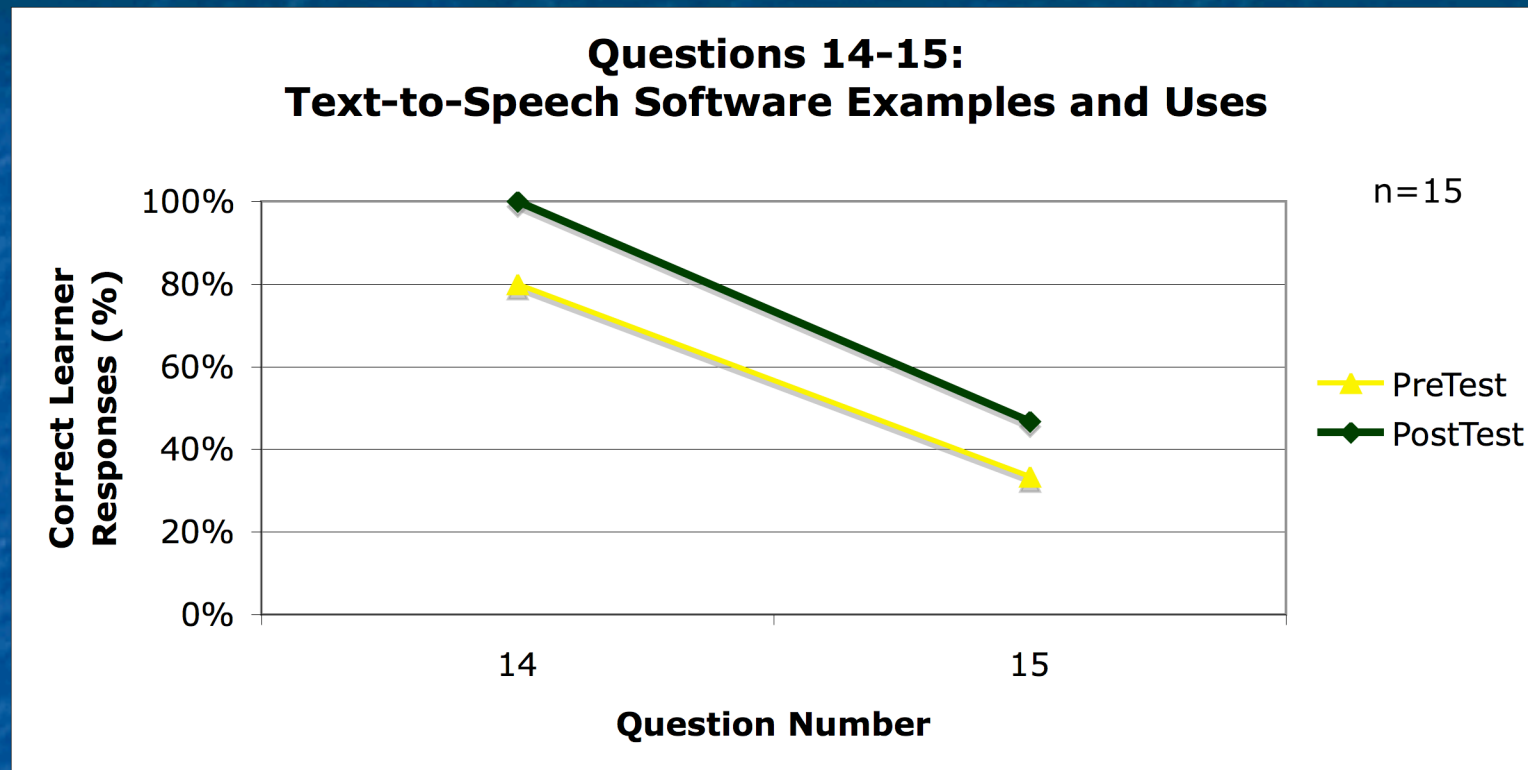
Speech-to-Text Software



12) Speech-to-text and typing skills

13) Speech-to-text and other student strengths and weaknesses

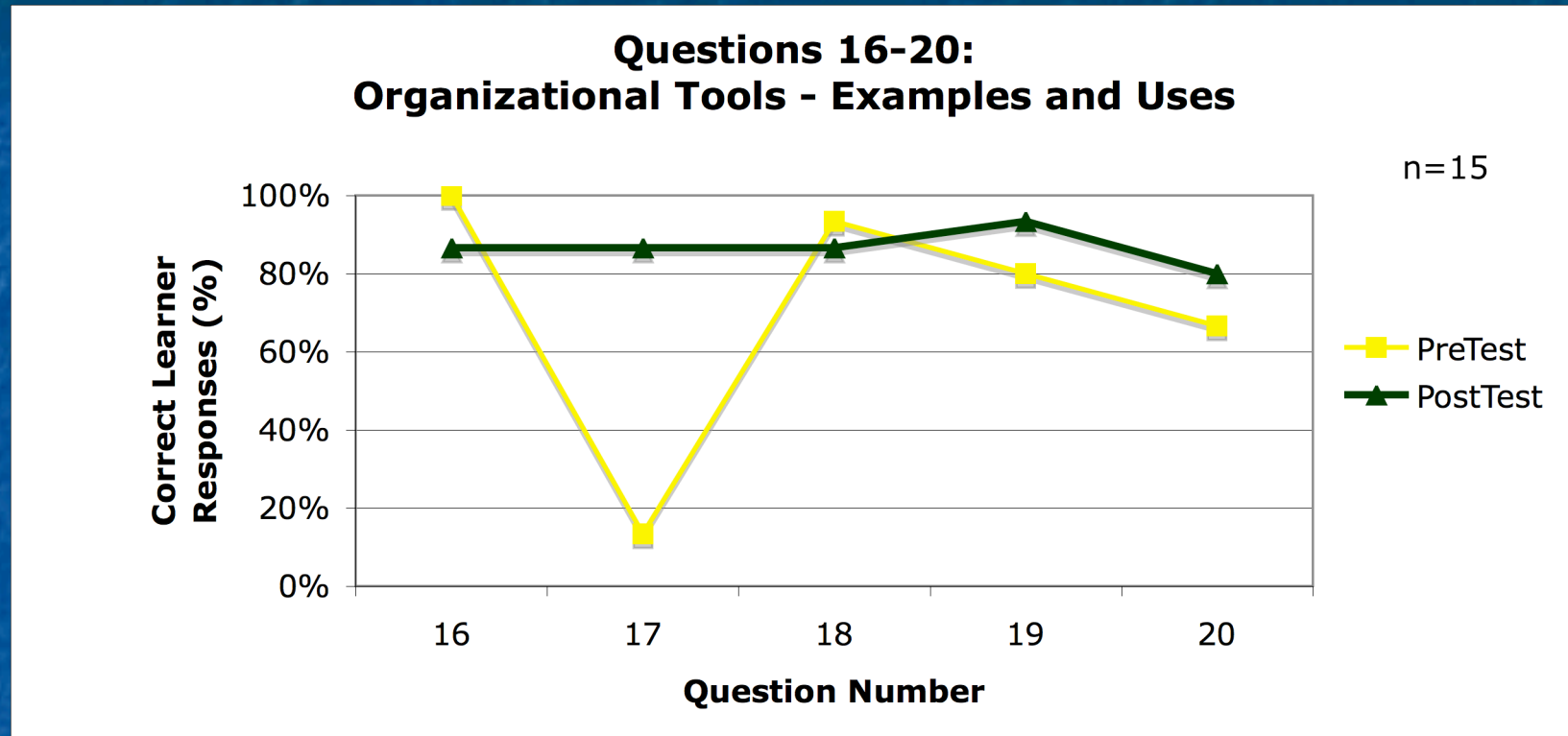
Text-to-Speech Software



14) Text-to-speech and listening comprehension

15) Speech-to-text and other student strengths and weaknesses

Organizational Tools



16) Examples of organizational tools

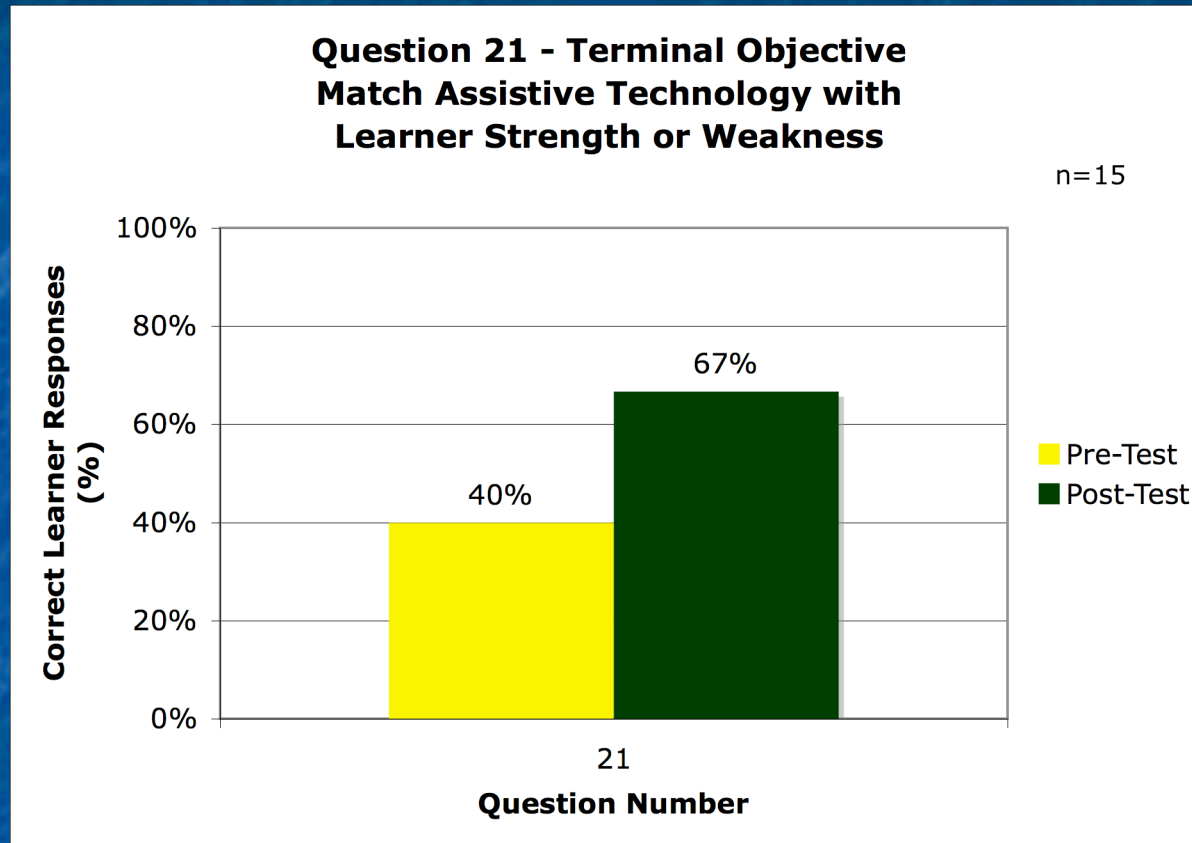
17) What can outliners do?

18) What can graphic organizers do?

19) What can PDAs do?

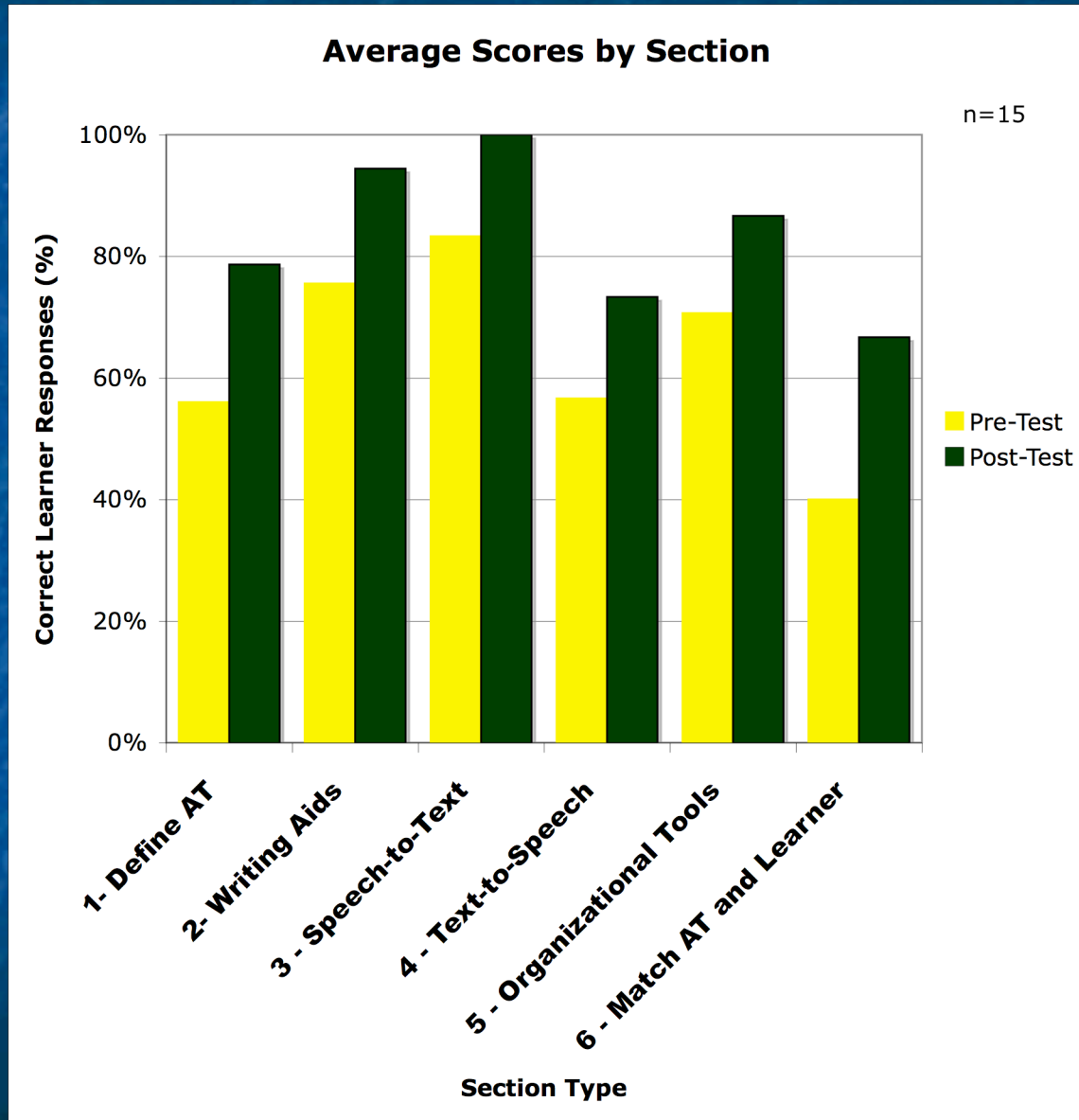
20) Match organizational tool to student learning

Terminal Objective



21) Match assistive technology tool to student learning strength or weakness

Scoring by Section



Percent increase
pre-test to post-test

1) +23%

2) +18%

3) +17%

4) +16%

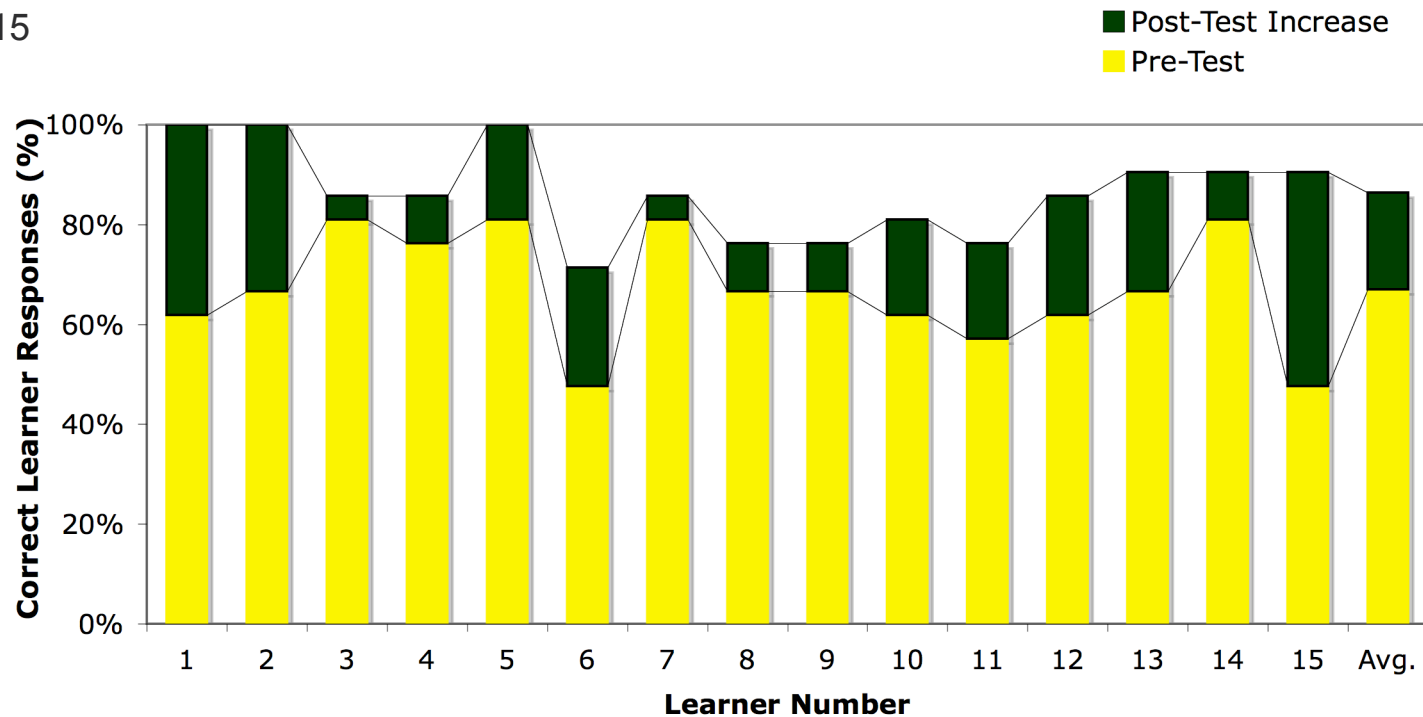
5) +16%

6) +27%

Individual Learner Increase

Individual Learner Pre-Test to Post-Test Increase

n=15



All learners showed an average increase in scoring!

Survey Comments

- “Information was very useful and will help me right away”
- “I thought the module was very easy to understand; however, it did lack in excitement for me. I would have enjoyed seeing more examples through pictures or videos.”
- “Many of my problems were due to viewing it in the wrong resolution.”

Survey Findings

- Some technical problems - instructions not read, resolution size, rollovers
- Technical Difficulties - 6 out of 15 learners

Key:

4 = Strongly Agree

2 = Disagree

3 = Agree

1 = Strongly Disagree

- Instructions clear - 3.2
- Module helpful - 3.3
- Attained info and skills unknown before - 3.3

Recommended Revisions

- Resolution problem - fixed!
- Rollover problem - fixed!
- Pages too text heavy - need to fix
- Want more videos - v2.0
- No learner objectives - added

Conclusions

- Pre-Test scores averaged at 67%
 - ✓ Consider more challenging non-examples
 - ✓ Guessing might be a problem (add “don’t know”)
- Overall scores increased an average 19%
- Terminal Objective increased an average 27%
 - ✓ Can it go higher than 67% post-test?
- Learners gained information!
- More is needed (based on surveys)

Future Enhancements

- Create other instructional modules
- Create a Web site portal with links
- Create a discussion board for teachers
- Make suggestions to College of Education

What I Learned ...

- Good practice for big projects
- Research perspective vs. observational
- Still a lot of people with low tech skills

What Went Right ...

- Results better than expected!
- Surprised myself with creativity
- Great feedback, especially Dr. Yamashita!
- Nice standalone module created!

What Would I Do Differently ...

- Resolution size - no problems until small groups
- Writer's Block!!!!
- Research problems

Thank You!

- Questions?
- Suggestions?
- Thoughts?