How to Gather Useful Evidence for Access Assessment

Heidi Koester, Ph.D.
hhk@kpronline.com
Koester Performance Research
Ann Arbor, MI

www.kpronline.com

Access Intervention Process

- Determine client needs and goals
- Assess characteristics of:
  - Client
  - Environment
  - Task
- Compare possible solutions for input & output
- Recommend particular solution
- Implement recommendation
- Measure outcomes

Evidence-based Practice (EBP)

- Make decisions based on evidence that relates to the client
  - External or field evidence
    - What are published outcomes for similar clients with similar needs?
  - Individual evidence
    - Clinical skills assessment
    - Client input
  - Knowledge and skills of the providers
    - What's worked well for similar clients that I've worked with?

Evidence helps answer these questions:

- How well is my client's current system meeting her needs?
- Will a new access system benefit this student?
- Which access system will be the most effective? Why?
- Is the new system an improvement over the old one?
- Are my student's abilities changing over time?
- Are there barriers to better performance that we can work on?

Role of Computer-Based Tools

- Focus on assessment of client abilities
- Present repeatable computer-related tasks in a realistic setting
- Aid in data collection and report generation

- Ideally – get the information you need, in less time!

Specific Tools for Computer Access Skills

- Assessment of Computer Task Performance
- EvaluWare
- Single Switch Performance Test
- Custom Solutions
- Compass

Features to look for:

- Automatic recording of performance data
  - More accurate, more efficient
  - Frees clinicians to focus on subjective observations
  - Provides "hard data" to complement human judgment
  - Are the data correct?
- Computer-presented tasks
  - More repeatable, compare "apples to apples"
  - Efficient clinician control over test set-up
  - Customizable for client needs
  - Are the tasks valid?
- Storage and retrieval
  - Immediate reporting of results
  - Easily accessible for later review

What is Compass?

- A software tool for clinical professionals who perform computer access and augmentative communication evaluations.
- Measures user performance in skills needed for computer interaction, such as keyboard and mouse use, navigating through menus, and switch use.
- Stores and reports the results.

Demo of Main Compass Features

- Pointing Tests
  - Aim, Drag, and Menu
- Text Entry Tests
  - Letter, Word, Sentence
- Switch Use Tests
  - Switch Press, Scan
- Flexibility of test set-up
- Compatible with alternative inputs and outputs
- Speed and accuracy reports

Compass Performance Report example uses

- Setting therapy goals
  - Identifying needs
  - Justifying areas of work
- Setting IEP goals
- Funding support
- Choosing methods and techniques
- Measuring outcomes

Some Principles for Gathering Clear Evidence

- Plan Your Assessment
  - Formulate a measurable question:
  - "Does the small footprint keyboard provide better typing speed and accuracy than the standard keyboard?"
- Tailor the Tests
  - Make sure the test is assessing the right thing
  - Try to change only one factor at a time
- Run the Tests
  - Make sure the user understands the test
  - Consider running a couple of practice trials
  - Need equivalent-but-not-identical items across subsequent tests (Compass takes care of this.)

Compass Software – example

- High school student with cerebral palsy
- Difficulty with reliable use of a single switch to access a computer and other devices

- Use Compass to compare several switch sites

Switch Activation & Setup
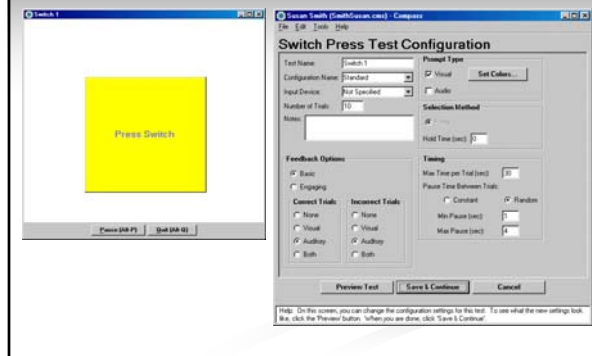
Compass Switch Press Results

	Correct Trials	Avg. Trial Time (s)	Avg. Press Time (s)	Avg. Release Time (s)
Head Right	5/5	8.5	7.8	0.64
Head Left	5/5	9.0	8.5	0.57
Head Posterior	4/5	17.4	11.1	6.32
Right Hand	2/5	19.4	15.6	3.8
Right Finger	4/5	11.2	8.6	2.5

NOTE Average Release Time

Compass Software – example

- Plan the Assessment
  - What was the measurable question?
- Tailor the Tests
  - What factor changed for each test?

Compass Example #2

- 68 y/o woman with multiple sclerosis
- Reports some difficulty with typing
- First step was to conduct a baseline assessment of typing ability, using the Compass Sentence test
- Baseline assessment revealed significant problem with auto-repeat

	Typing Speed (wpm)	Total Errors (%)
Baseline	2.2	60

Compass Example #2

- Plan the Assessment:
- Will adjusting the repeat rate result in improved speed and accuracy for typing?

- Tailor the Tests:
- The only new factor in the second test is the slower repeat rate

- Run the Tests:
- Equivalent-but-not-identical typing tests under 2 conditions

Compass Example #2 - results

	Typing Speed (wpm)	Total Errors (%)
Baseline	2.2	60
Slower Repeat Rate	3.2	28

- Slowing the repeat rate resulted in 50% faster typing speed
- Eliminated many, but not all, errors

Compass Example #3

- Young adult with cerebral palsy
- Uses mouse on one computer, and trackpad on another
- She wanted to know if any pointing device offered a clear advantage

Compass Example #3

- Plan the Assessment:
- Will pointing device affect speed and accuracy in a target acquisition task?

- Tailor the Tests:
- The only new factor in the repeated test is the pointing device.

- Run the Tests:
- Equivalent-but-not-identical tests for target acquisition, repeated for each pointing device.

Compass Example #3

- Performed Compass Aim tests with three different pointing devices
- Test set-up was identical for each device

	Trial Time (sec)	Entries
Mouse	2.6	1.4
Trackpad	4.9	1.3
Trackball	5.4	1.3

- Control looked similar, qualitatively
- But mouse was about 2x faster than trackpad or trackball

Final Words

Development of Compass was supported by NIH grant 2R42 NS3625202A1.

Compass is available through:
- Koester Performance Research
- Infogrip
- AAC Institute
- EnableMart
- Technology for Education

Contact: Heidi Koester, hhk@kpronline.com
                www.kpronline.com