

Cognitive Curbcuts with Picture Planner 3.0: Cognitively Accessible Personal Organization, Mobile Calendaring, and Information Sharing

Val Stilwell, MSCS
Tom Keating, Ph.D.
Cognitopia Software-Eugene Research Institute

UAAACT 2011

© Cognitopia Software <http://www.cognitopia.com>

3

Session Outline

- Accessible calendaring as self-management: An icon-based personal organization application
- Interconnected self-management: Information sharing and Web 2.0
- Mobile access through iOS devices: iPad, iPod touch, iPhone

© Cognitopia Software <http://www.cognitopia.com>

2

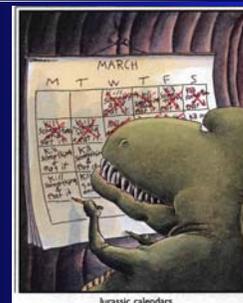
Background and Development Goals

1. Design of innovative personal organization and self-management software applications for users with cognitive disabilities.
2. Development grounded in direct experience.
3. Understanding elements of interface design that enhance cognitive accessibility.
4. Design for two end user groups: individuals with cognitive disabilities *and* support network.

© Cognitopia Software <http://www.cognitopia.com>

3

Why Personal Organization? Early Evidence of Importance



Far Side Gallery 5
- Gary Larson

© Cognitopia Software <http://www.cognitopia.com>

4

Question: When to learn personal organization?

- Answer: *As early as possible*
- Skills don't develop overnight
- Way of thinking takes even longer
- Don't wait until transition
- Technology is all about control

© Cognitopia Software <http://www.cognitopia.com>

5

Personal control and the “machine effect”

- Most of us would rather be told what to do by machines than people
- Decreased coercion quotient
- Potential of technology to structure support interactions and augment both sides of relationship

© Cognitopia Software <http://www.cognitopia.com>

6

Designing for Cognitive Accessibility

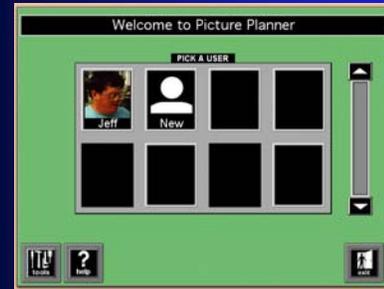
- All single click operation
- Clean interface with limited controls
- Tri-modal icons: graphic, text, TTS
- Customizable icons: photos, symbols
- “Hub and spokes” navigation vs. webbed
- Management of graphic transitions
- Metacognitive, task analytic design
- Social connectability potential
- Intelligent features

© Cognitopia Software

<http://www.cognitopia.com>

7

Multi-User Login

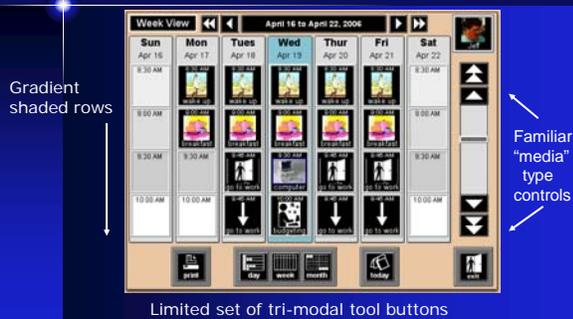


© Cognitopia Software

<http://www.cognitopia.com>

8

Week View

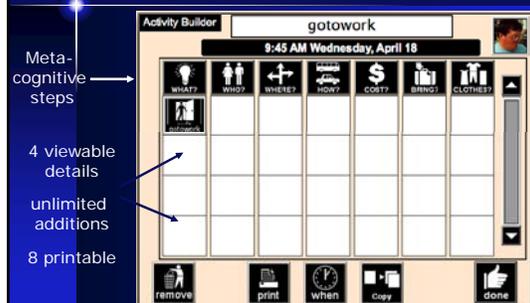


© Cognitopia Software

<http://www.cognitopia.com>

9

Activity Builder



© Cognitopia Software

<http://www.cognitopia.com>

10

Activity Builder

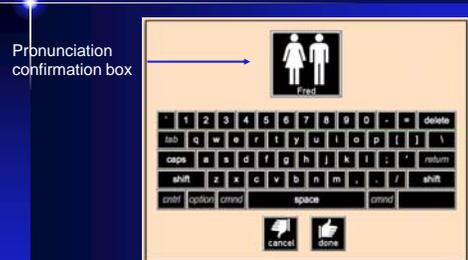


© Cognitopia Software

<http://www.cognitopia.com>

11

Onscreen Keyboard



Enables text entry for kiosk format and dwell software
(no scanning...yet)

© Cognitopia Software

<http://www.cognitopia.com>

12

Activity Builder



A completed activity

© Cognitopia Software

<http://www.cognitopia.com>

13

Day View



list view
by duration
(5 minute
minimum)

one row
of key info
(expandable)

"home" button

© Cognitopia Software

<http://www.cognitopia.com>

14

"When" details



© Cognitopia Software

<http://www.cognitopia.com>

15

Persistent Pop-Up Reminders



© Cognitopia Software

<http://www.cognitopia.com>

16

Month View

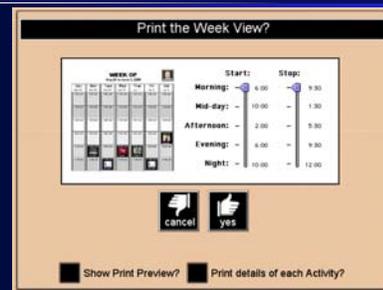


© Cognitopia Software

<http://www.cognitopia.com>

17

Print Dialog

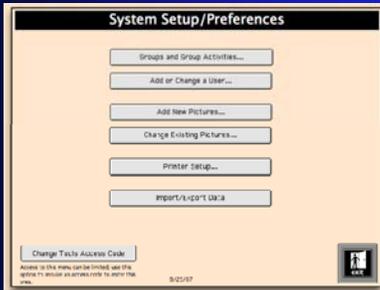


© Cognitopia Software

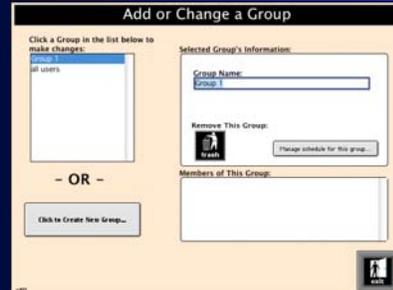
<http://www.cognitopia.com>

18

Admin Tools



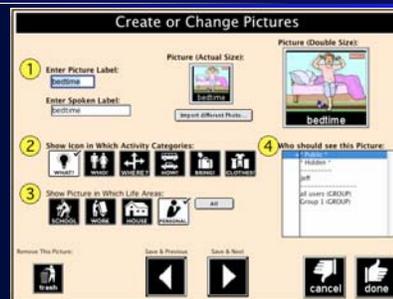
Group Scheduling



Change Icons



Edit Icon Details: Minimal Setup



Implementation Research

- Students aged 16-21 with mild to moderate intellectual disabilities such as mental retardation, autism, traumatic brain injury, as well as students with cerebral palsy and learning disabilities (N= 28)
- Two secondary school community transition/apartment living skills programs:
 - One large urban school district
 - One mid-size district
- 5 point rating of level of prompting needed for user actions required to schedule a complex activity

Findings

- Surprising levels of independent skill: 54% independence with 8 weeks of 1/2 hour instruction. (verbal reminders only for activity details; Range: 29-82%)
- *Interdependence is key*: Independence is great but not the Holy Grail. Software design should address staff support factors (e.g. level of skill, assisted use, usability)
- Accessible software applications can be important tools for development of self- management and self-determination. Choices = Control

Findings

- The gap between available technology and its implementation is significant and formidable. *Has to be easy to use for changing staff.*
- There are implementation challenges with even the seemingly simplest of technologies; e.g. awareness, staff training, community settings, technical support. *Again, has to be easy to use with minimal setup.*
- Time and schedule management are central to life skills because they're key to intensity of supports, vocational success, and level of independence in adult settings.

© Cognitopia Software

<http://www.cognitopia.com>

25

Cognitive Augmentation in PP 3.0

- Auto-completion of new activities based on prior similar events
- Usage reporting to document application use, activities scheduled and completed to support IEP goals and documentation
- Expanded customization options (e.g. multiple item selection)
- Review mode similar to handheld "slideshow" prompting mode
- Completion indicators allow user to mark activities as completed
- Augmented text-to-speech features
 - TTS Activity notes allow addition of supplementary information
 - Pocket PP uses longer spoken labels
- Web 2.0/Social networking: Shared calendar information and social networking features
- And soon...
 - Context aware reminding: Smart activity and task prompting based on user activity and location.

© Cognitopia Software

<http://www.cognitopia.com>

26

Smart Tab Shows Prior Events



collected prior events

© Cognitopia Software

<http://www.cognitopia.com>

27

Autofill and Modify

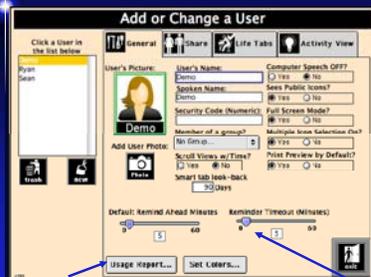


© Cognitopia Software

<http://www.cognitopia.com>

28

Expanded User Customization



usage data for IEP progress documentation

customize background colors

reminder settings

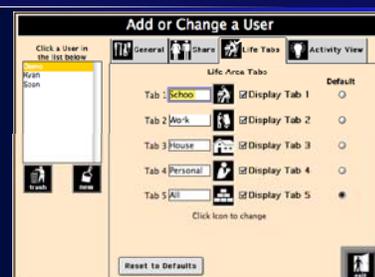
- spoken name
- security code
- TTS on/off
- icon limits
- kiosk mode
- reminder dismiss
- group identity
- add/change photo
- multiple selection

© Cognitopia Software

<http://www.cognitopia.com>

29

Customizable Content Filters

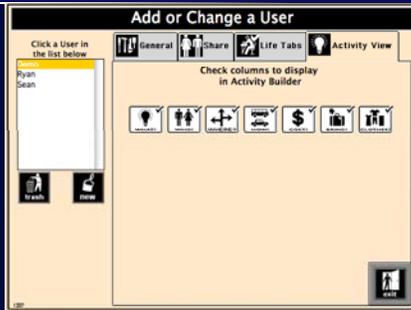


© Cognitopia Software

<http://www.cognitopia.com>

30

Column Display Options

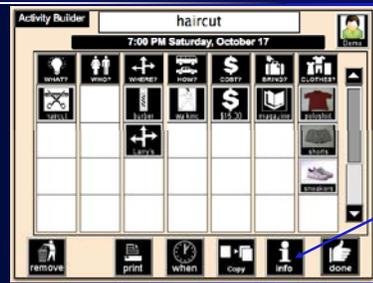


© Cognitopia Software

<http://www.cognitopia.com>

31

Add Supplemental Info



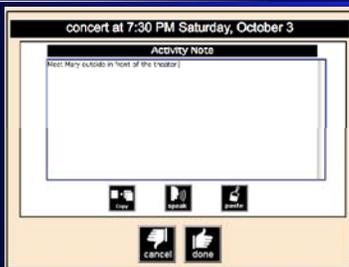
click to
add audio
text note

© Cognitopia Software

<http://www.cognitopia.com>

32

Info Notes with TTS

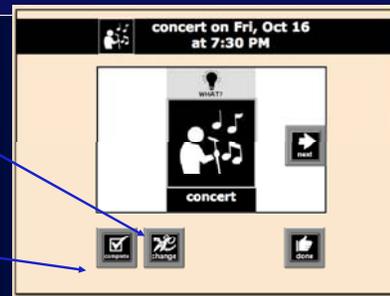


© Cognitopia Software

<http://www.cognitopia.com>

33

Review Mode



click here
for full
Activity
view

mark as
complete

Provides slideshow prompting view

© Cognitopia Software

<http://www.cognitopia.com>

34

Completion Indicators

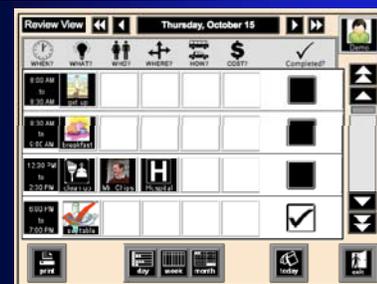


© Cognitopia Software

<http://www.cognitopia.com>

35

Day View with Completion

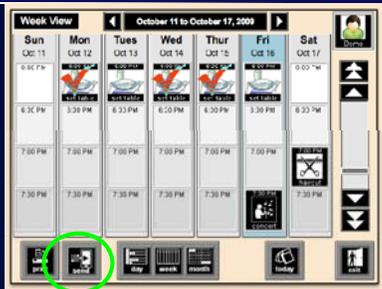


© Cognitopia Software

<http://www.cognitopia.com>

36

Week View with Completed Events and Send Button



© Cognitopia Software

<http://www.cognitopia.com>

37

Mobile Accessible Calendaring: Integrated Mac/PC-iOS System



- Create activities on Mac or Windows PC, view on iOS device, or sync to Google Calendar

© Cognitopia Software

<http://www.cognitopia.com>

38

Google and iOS User Settings



© Cognitopia Software

<http://www.cognitopia.com>

39

How it Works

- Download Pocket Picture Planner (HD) free app
- Sync PC to "cloud" server, not iTunes
- Sync app to view schedule on mobile device
- View events, mark as completed, sync info back to desktop/laptop
- Composing is done on Mac/PC

© Cognitopia Software

<http://www.cognitopia.com>

40

Syncing to Mobile Devices and the Web

- Sync to Apple iOS devices: iPad, iPod touch, iPhone
- Sync to Google Calendar



© Cognitopia Software

<http://www.cognitopia.com>

41

Pocket Picture Planner for iPod touch/iPhone and iPad



© Cognitopia Software

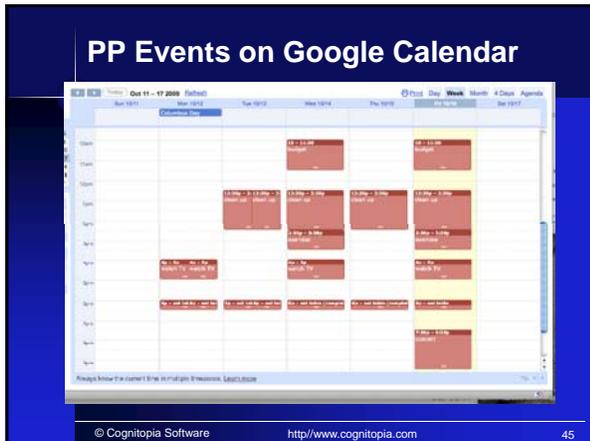
<http://www.cognitopia.com>

42



Web 2.0: Social Information Networking

- Information retrieval vs. information sharing
- “Circle of friends” 2.0
- Leverages existing social relationships, regardless of location
- Offers inclusion in lives of family and friends
- Provides avenue for peer interaction and support
- Cool factor



Benefits

- Two-way data flow provides cognitively accessible portal, a “cognitive curbcut”
- Provides platform for shared information management
- Independent of location or distance
- Google is text-based, but events flow back to Picture Planner and pick up icon representations
- Pathway to further Web 2.0 developments

Further Information

Contact us at:

vstilwell@cognitopia.com

tkeating@cognitopia.com

or

Come visit in the vendor hall

Acknowledgements:

Development supported in part by funding through the US Department of Education: National Institute on Disability and Rehabilitation Research Office of Special Education Programs