

Cognitive Aids in the Workplace: *time management and learning new tasks*

Ben Satterfield, Ed.D.

Ben Satterfield, Ed.D.



AT Specialist/ Research Faculty
GA Tools for Life/Center for Inclusive
Design & Innovation
Georgia Institute of Technology
rsatterfield8@gatech.edu

Assistant Professor
Communication Sciences & Special
Education/ College of Education / UGA
bsatt@uga.edu

Learning Objectives

Learning Objectives :

- Identify 3 challenges/functional limitations facing individuals with intellectual and developmental disabilities (I/DD) in obtaining employment.
- List 3 ways assistive technology can support individuals with I/DD in the workplace.
- Identify one finding or Approach from this study and describe how you will apply it in your work setting.

Accessibility Made Smart at CIDI

Accessibility Consulting – ICT & UX

Braille Services

Captioning and Described Audio
Services

Professional E-Text Producers

Certified Assistive Technology
Team

**Tools for Life is Celebrating 30
Years of Service this Year!**



We Are Contributing to an Inclusive World

CIDI is recognized as a leader for services and research in accessibility. We are dedicated to an inclusive society through innovations in assistive and universally designed technologies, with a goal of addressing the full range of needs for accessibility. We are committed to the promotion of technological innovation and development of user-centered research, products, and services for individuals with disabilities.

What is Assistive Technology?



Assistive Technology (AT) is any item or piece of equipment that is used to increase, maintain or improve the functional capabilities of individuals with disabilities in all aspects of life, including at school, at work, at home and in the community.

Assistive Technology ranges from no/low/light tech to high tech devices or equipment.

What do we know about individuals with I/DD?

- When dismissed from the public school system at age 22, these individuals generally experience **difficulty transitioning** to the larger community and **to the world of work**. (Satterfield et al., 2021)
- Unemployment and inactivity are often exacerbated by **coexisting health issues** including communication disorders (Mirenda, 2014; Taylor & Hodapp, 2012)
- Largely dependent upon family for support, their **isolation takes a toll** on their families as well. Most wait for some time to receive state funding (often Medicaid waivers) to enable their participation in a day program or for other support for their daily care (Braddock et al., 2008).

Employment of people with I/DD

- People with developmental disabilities are **often unemployed or underemployed** (Hirst, 1987; Howlin, 2005; Kuh et al., 1988).
- A 2015–2016 survey indicated that only **19%** of individuals with developmental disabilities were employed (National Core Indicators, 2019).
- **Few** workers with I/DD **work full-time** (Berge, 2007)
- As many as 81% of people with developmental disabilities are considered to be **living below the poverty line** (Butterworth et al., 2012).

Employment of people with I/DD ⁽²⁾

Employers report that employment of individuals I/DD results in workers who are:

- dependable, productive, and loyal workers
- enhancing to the work environment
- contribute to the goals of the organization in both measurable and incalculable ways.

Research suggests there is strong public support for businesses that employ individuals with I/DD.

Hanson-Baldauf, D., Weiss, M., & Bunch, T. (2014). Employer perspectives on the successful employment and retention of workers with intellectual and developmental disabilities. SHRM Foundation

Obstacles to employment

- Studies suggest that there are:
 - **social conditions in the environment** (Fuhrmann et al., 2018 and Young, 1990) that present barriers and hindrances
 - **physical barriers in the work environment** (Hanson-Baldauf, et al., 2014) that obstruct and prevent individuals with developmental disabilities from full participation in the workplace.

Assistive Technology



The **use of AT** for persons with intellectual and developmental disabilities has been shown to **promote independence** and **enhance the quality of performance** on daily tasks (Davies et al., 2002; Gilson et al., 2017; Wehmeyer et al., 2006).

Work ACCESS & the Assistive Software Knowledgebase



Work Access collects
information on:



Workplace Accommodation Expert Support System (Work ACCESS)

A NIDILRR - funded project to design a system for suggesting workplace accommodations for employees with disabilities.

Initial Activities (with an Office focus):

- Moving About Workplace
- Reading / Writing Print
- Using a Workstation
- Communicating Face-to-Face
- Using a Phone / Communicating Remotely
- Using a Computer
- Planning the Work Day
- Staying on Task
- Learning Work Tasks

WorkACCESS: Functional Limitations Examined

The employee has difficulty with:

- **Attention:** Sustaining, shifting, or dividing attention
- **Memory:** Short-term or long-term
- **Emotions:** Regulating emotions or expressing appropriate emotions
- **Organization:** Organization, planning, and time management
- **Calculations:** Simple and complex calculations
- **Written language:** Reading or expressing written language
- **Verbal directions:** Understanding verbal directions

Also: Mobility, Dexterity, Vision, Hearing, Speech



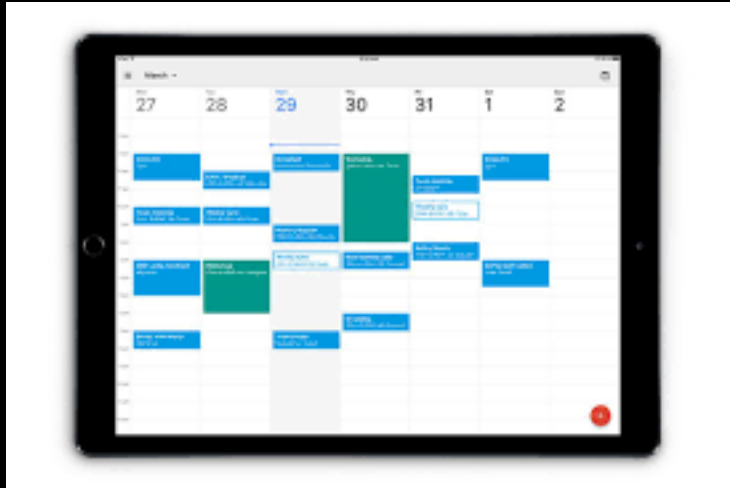
Task: Planning the Work Day

Task: Planning the Work Day ⁽¹⁾

Problems encountered in planning the workday:

- Remembering appointments or meetings
- Remembering work tasks that need to be completed
- Time management (e.g., addressing important items in a timely manner)
- Accessing standard text-based calendar or time management programs

Problem: Employee has difficulty remembering appointments (1)



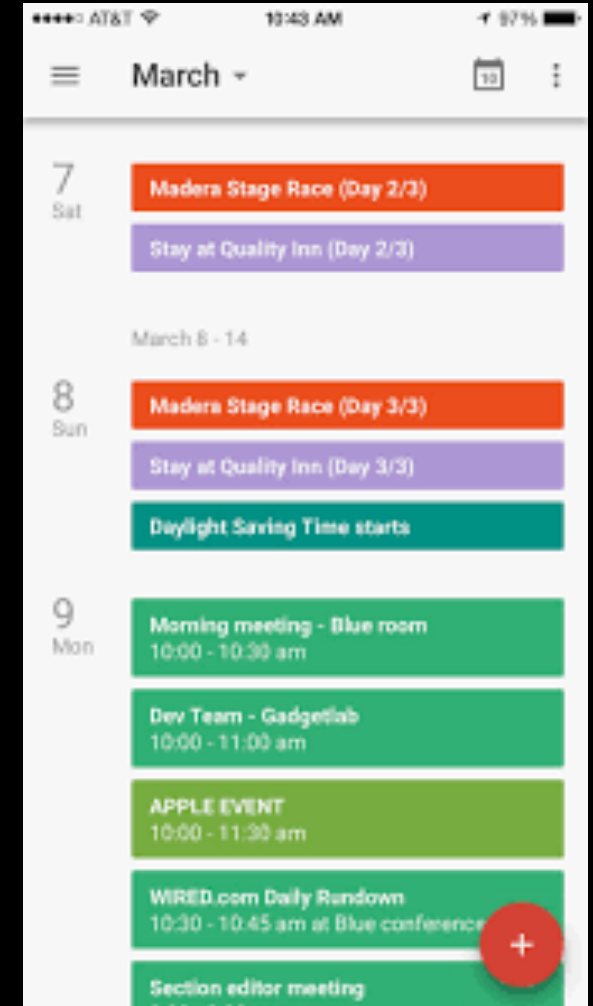
Approach: Record appointments as they are scheduled

1. Use an electronic calendar/app
2. Use a paper-based appointment book or calendar
3. Use paper or dry erase board calendars
4. Use a large print or Braille appointment book or calendar *[Vision]*
5. Use a system that supports voice recorded messages

Problem: Employee has difficulty remembering appointments (3)

Approach: Provide an alert in advance of the appointment

1. Use an electronic calendar/app that includes reminders or alarms
2. Set an alert/alarm to go off before the appointment
3. Review future appointments for the week and for the next day.

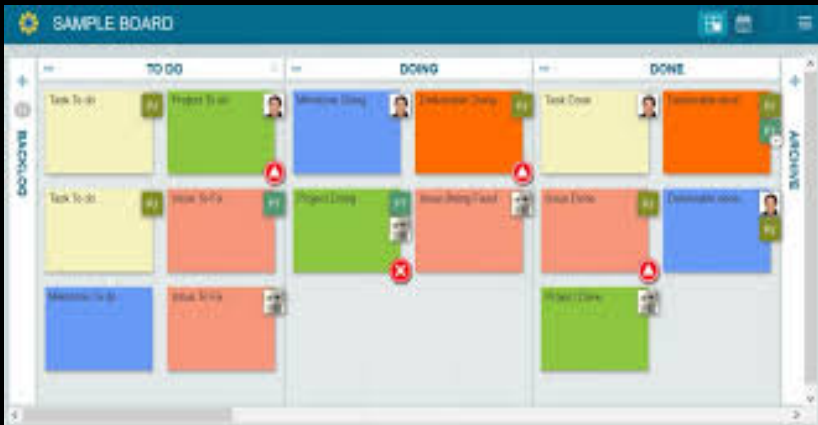


Problem: Employee has difficulty remembering assignments ⁽¹⁾



Approach: Record work tasks as they are assigned, with dates and times the assignments are due

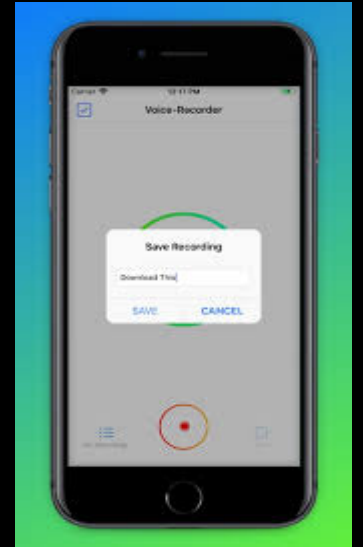
1. Use electronic to-do lists
2. Have supervisor to create an electronic to-do item and then assign it to the employee
3. Use written to-do lists or a homework planner
4. Use paper or dry erase board task lists



Problem: Employee has difficulty remembering assignments ⁽³⁾

Approach: Record work tasks as they are assigned, with dates and times the assignments are due

5. If the person has a repeating list of tasks that must be completed each week or each day, provide a daily “personal schedule” (Laminated schedules)
6. Use a system that supports voice recorded



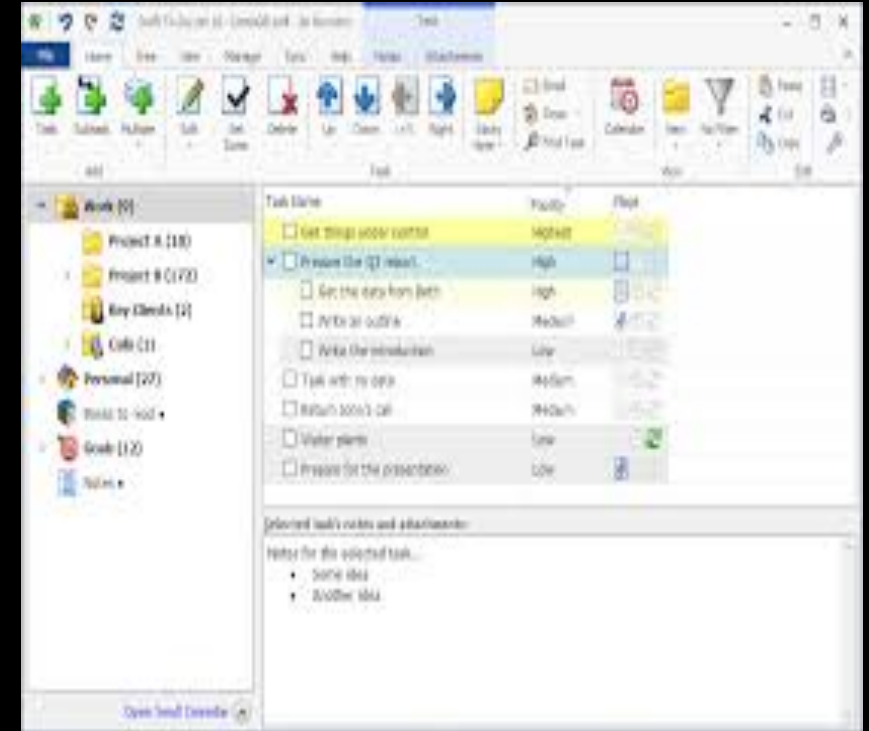
Problem: The employee has difficulty with time management

Approach: Provide reminders for tasks or activities

1. Use an electronic system that provides reminders not only for scheduled appointments, but also for unscheduled to-do list items

Approach: Break down complex assignments into smaller, easier to manage tasks

1. Break down complex assignments into smaller, easier to manage tasks.



Problem: The employee has difficulty with time management ⁽¹⁾



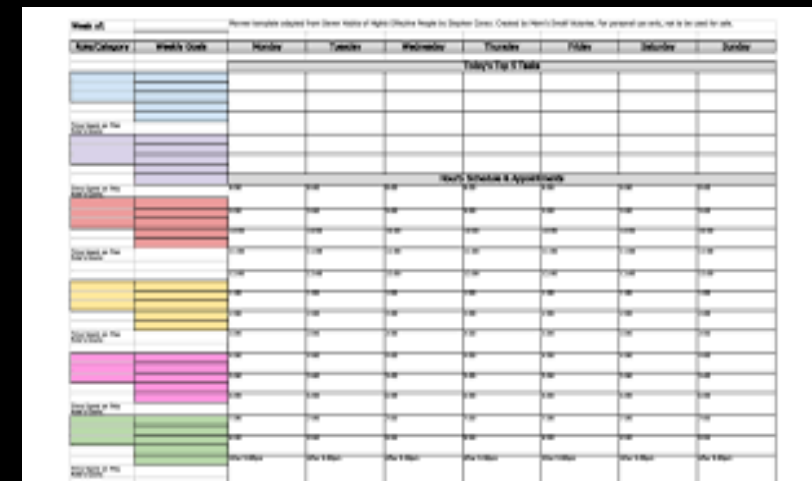
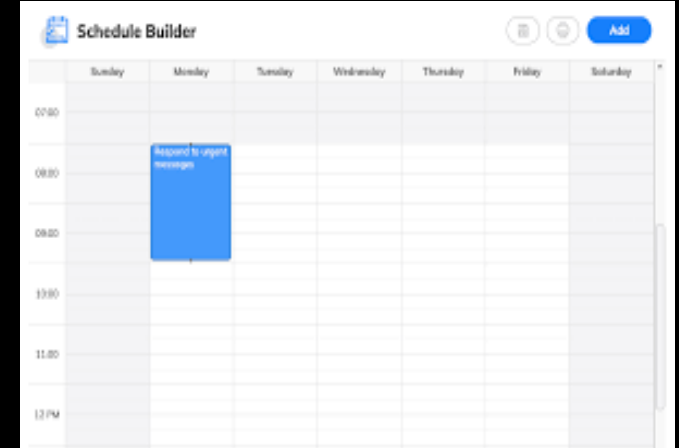
Approach: Block out time for completion of the task, not just start times

1. Estimate how long each task will take and block out the full amount of time in a daily schedule.
2. Use an electronic calendar/app that allows blocks of time to be moved around for easier planning.
3. Set an alert before appointments to allow time to get to the appointment.
4. Estimate how long each task will take and block out the full amount of time in a daily schedule.

Problem: The employee has difficulty with time management ⁽²⁾

Approach: Block out time for completion of the task, not just start times

5. Use an electronic calendar/app that allows blocks of time to be moved around for easier planning.
6. Set an alert before appointments to allow time to get to the appointment.
7. Use a visual timer or app to show the total amount of time to complete the task and how much time has passed. Set an alert before appointments to allow time to get to the appointment.
8. Provide reminders when a due date is coming up.
9. Provide reminders when it is time to switch to the next task. When scheduling alerts, include time for the employee to transition to the next task.



Problem: The employee has difficulty with time management ⁽³⁾

Approach: Assign priority levels to tasks

The image shows a sample page from a time management planner. It includes a calendar for April and May, a legend for task status, a prioritized daily task list, and an appointment schedule.

Calendar: The calendar shows the days of the week (S M T W T F S) and the dates. The current date is Friday, April 11. The calendar also shows the dates for March and May.

Legend: The legend defines the symbols used in the task list: a checkmark for 'Completed', a plus sign for 'Forwarded', an 'X' for 'Deleted', a circle with a checkmark for 'Designated', and a dot for 'In Process'.

Prioritized Daily Task List: The task list is titled 'ABC Prioritized Daily Task List' and contains the following tasks:

Priority	Task
A1	Daily planning
C1	Buy gift
A2	Call literacy administrator
B2	Finalize sales report
A3	Read professional journal
B3	Call Wendy
B1	Call travel agent

Appointment Schedule: The appointment schedule is a table with columns for the days of the week (S M T W T F S) and rows for the dates. The dates shown are 8, 9, 10, 11, and 19.

1. Have supervisors communicate which work tasks take priority.
2. Identify tasks that have a higher priority due to task sequence (tasks that must be completed before others can be done).
3. Make a list of work tasks in the order in which they need to be completed.
4. Use an electronic system/mobile app that helps lay out a schedule based on scheduled events and task priority.

Problem: The employee has difficulty accessing standard text-based calendar or time management programs ⁽¹⁾

Approach: Use a time management system that is voice controlled

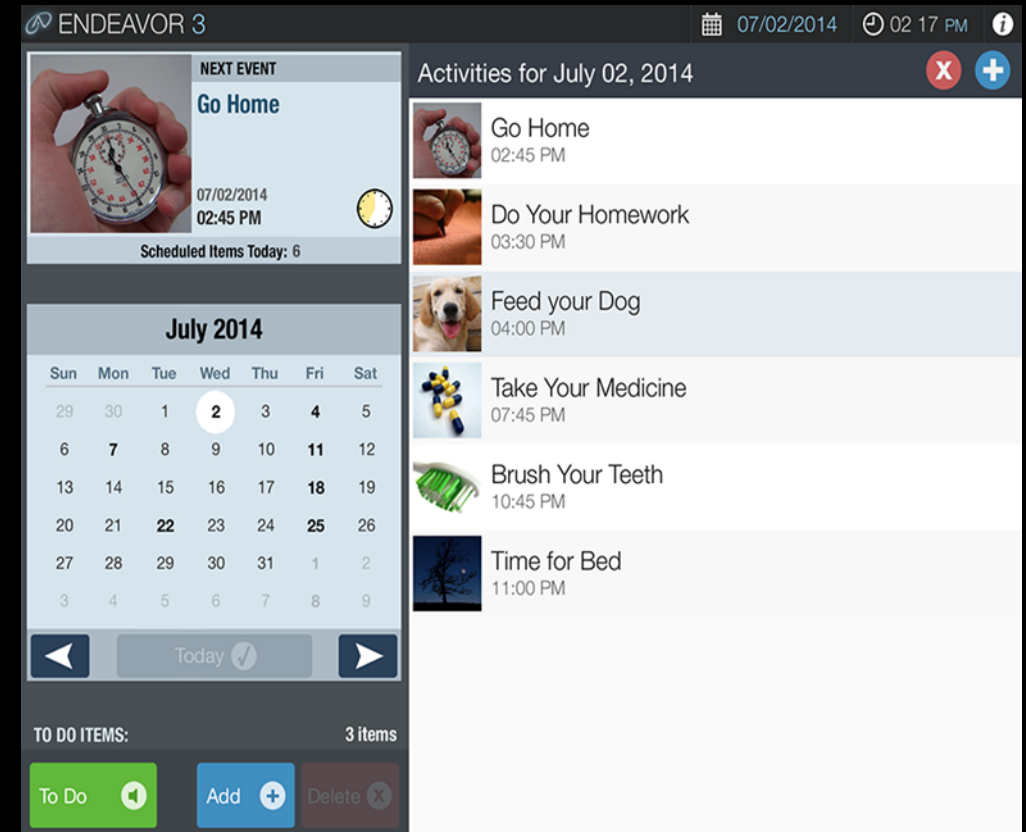


1. Look for apps that can be operated through voice commands and dictation.
2. Use smart technology (e.g., Alexa, Siri) to add items to an electronic calendar
3. Use a reminder system based on voice recorded messages (e.g., Endeavor app).

Problem: The employee has difficulty accessing standard text-based calendar or time management programs (2)

Approach: Use a time management system with spoken alerts

1. Look for apps that provide spoken alerts.
2. Use a reminder system based on voice recorded messages (e.g., Endeavor app).








Problem: The employee has difficulty accessing standard text-based calendar or time management programs (3)



Approach: Use a time management system with a visual, non-text interface

1. Look for apps that use pictures and/or color-coding instead of, or in addition to, text.
2. Represent calendar and schedule entries with pictures and/or color-coding.

Check Your Jobs for Today			
Name	1st	2nd	3rd
Matt	 sweep	 clean	 make coffee
Adrian	 wash dishes	 cupcakes	
Joe	 stock drinks	 fold boxes	 trash
Kelsey	 choc corn	 breading	

Approach: Provide training on how to use the time management tools

1. If needed, help employees learn how to use their time management tools, including adding tasks, setting alarms, and carrying unfinished tasks to the next day.

Questions?



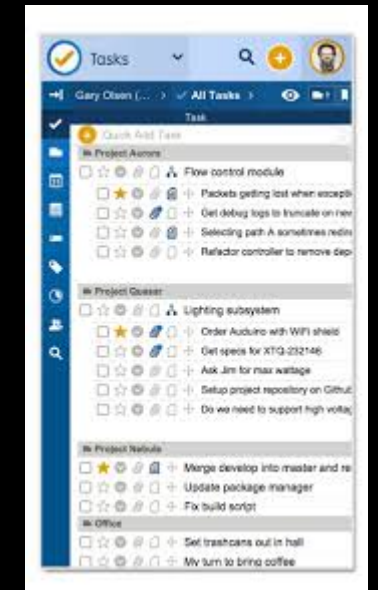
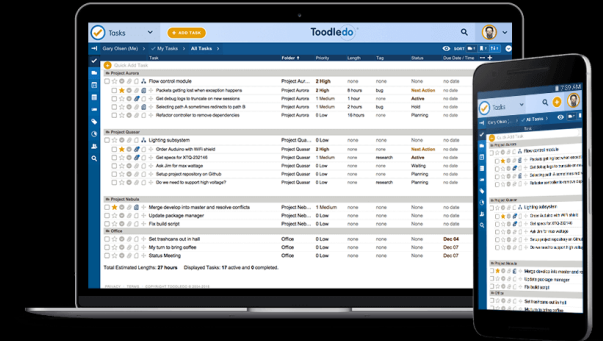


Task: Staying On-Task ₍₂₎

Problem: Employee has difficulty remaining focused on task ⁽¹⁾

Approach: Provide a checklist of task steps or assigned tasks for the day

1. Use an app to list out the steps needed to complete the work for the day and have the employee check items off as they are completed.
2. Make a paper list of the steps needed to complete the work for the day and have the employee check items off as they are completed.



Problem: Employee has difficulty remaining focused on task ⁽²⁾

3. Use a digital check-off list (on tablet or cell phone) that a manager or team mate can check on (collaboratively/remotely)



Problem: Employee has difficulty remaining focused on task ⁽³⁾

Approach: Provide / permit a means for the employee to channel excess energy in ways that allow him or her to remain on task and not distract others

1. Have the employee use hand-held fidgets.
2. Use a ball chair for temporary alternative seating.
3. Use a sit-stand workstation to allow the person to change positions occasionally while working.
4. Use an exer-cycle under the workstation to pedal while working.



Problem: Employee has difficulty remaining focused on task ⁽⁴⁾

Approach: Change tasks throughout the work day

1. Have the employee switch tasks several times during a work day and use the time between tasks as a “break” to stretch and reset.

Approach: Provide additional, short breaks to allow the employee to refocus

1. Provide hourly, short (e.g., 2-3 minute) breaks to allow the employee to stretch and reset. Try having the employee switch tasks several times during a work day and using the time needed to switch tasks as a “break”.
2. Use digital reminders to announce breaks and when the employee needs to return from break.

Questions? ⁽¹⁾





Task: Learning / Remembering How to Perform Specific Tasks or Procedures ⁽²⁾

Task: Learning / Remembering How to Perform Specific Tasks or Procedures ⁽¹⁾

Problems & Strategies:

- Remembering steps in an assigned task
- Remembering specific information needed to complete an assigned task
- Accessing on-the-job training

Problem: Employee has difficulty identifying / remembering steps in an assigned task ⁽¹⁾

Approach: Provide reminders of the task steps

1. Do an analysis, identifying steps for completing the task.
2. Provide a video model of the skill being completed (HD Reveal) that shows critical details.
3. Provide a text-based list of the task steps.
4. Provide a list of the task steps in a format that the employee can access, such as large print or Braille.
5. ...

TASK ANALYSIS				
10				10 10 10 10 10 10 10 10 10 10
9	Place clean dish in dish drain to dry.	V-1	10 sec	9 9 9 9 9 9 9 9 9 9
8	Rinse dish under running water.	V-1	10 sec	8 8 8 8 8 8 8 8 8 8
7	Scrub dish with dish scrubber until clean.	V-1	20 sec	7 7 7 7 7 7 7 7 7 7
6	Pick out a dish from the sink.	G-1	5 sec	6 6 6 6 6 6 6 6 6 6
5	Pick up dish scrubber.	V-1	5 sec	5 5 5 5 5 5 5 5 5 5
4	Place dishes in sink.	G-1	20 sec	4 4 4 4 4 4 4 4 4 4
3	Pour in dish detergent.	V-1	10 sec	3 3 3 3 3 3 3 3 3 3
2	Put in stopper to sink.	V-1	10 sec	2 2 2 2 2 2 2 2 2 2
1	Run hot water.	V-1	5 sec	1 1 1 1 1 1 1 1 1 1

Problem: Employee has difficulty identifying / remembering steps in an assigned task ⁽²⁾

Approach: Provide reminders of the task steps

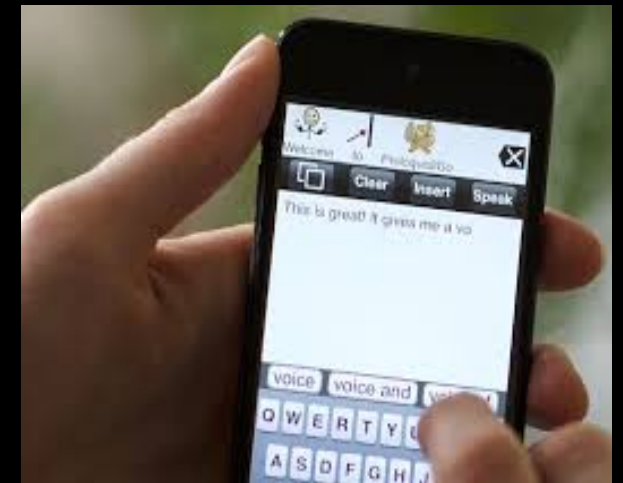
5. Provide pictures that the employee can use to compare their work to the desired result (e.g., picture that shows proper placement of an address label).
6. Use a low-tech flip book to show images of each step of a task, in order, along with some printed instruction. *[if also written language]*
7. Use a talking photo album to combine pictures of each step of a task, in order, with digital recordings of instructions. *[if also written language]*
8. ...



Problem: Employee has difficulty identifying / remembering steps in an assigned task ⁽³⁾

Approach: Provide reminders of the task steps

8. Use a voice output communication aid (VOCA)
9. Use an app to review pictures and listen to recorded instructions
10. Use music, jingles or rhythmic patterns



Problem: Remembering specific information needed to complete an assigned task ⁽¹⁾



Approach: Provide reminders / cheat sheets with the information needed to complete assigned tasks (e.g., account numbers, list of which apps or websites to use for which task)

1. Use easily-visible reminders in the form of post-its, computer post-its, or a notes on a bulletin board.
2. For more private information, create electronic files that contain the information.
3. Make sound recordings of the information that can be played back when needed, particularly if the employee is not a strong text user.
4. Store passwords securely in a reminder system (e.g., 1Password, Dashlane)

Problem: Employee has difficulty accessing on-the-job training ⁽¹⁾



Approach: Ensure that video training materials are accessible

1. Provide captions, or at least a transcript, for video materials
2. Provide a description of important visual material.

Problem: Employee has difficulty accessing on-the-job training ⁽²⁾

Approach: Provide one-on-one, hands-on training

1. If packaged training materials are not accessible, or if the employee will be doing the job differently due to his or her accommodations, try providing one-on-one training.
2. Employees might learn job tasks better if hands-on training is provided.



Example of Cognitive Tool Integration

RoutineFactory.Com

- App for individual
 - Schedule reminders
 - To do checklists
 - Tasks completion
 - QR Codes in environment
 - Flip charts
- Web environment
 - Remote monitoring
 - Remote support
- Information Board - interactive
 - Workplace organization
 - Central Info at employee's level



Questions?₍₂₎



Help us Validate our Decision Trees!

- Tell us how to improve our recommendations
- Choose a work Task to critique and provide ratings/comments about the relevance and clarity of a random sample of problems/solutions
- Participants will be entered into a drawing for a \$50 Amazon gift card.
- Click on this link:
https://gatfl.gatech.edu/tflwiki/index.php?title=Work_ACCESS_Validation_Surveys
- (or you can email us with more specific comments about the solutions discussed in this presentation)

Thank you!

Thank you for your participation in this presentation!

If you have any questions or additional thoughts to share, please feel free to contact:

Ben Satterfield	ben.satterfield@design.gatech.edu
-----------------	--

Karen Milchus	karen.milchus@design.gatech.edu
---------------	--

Carolyn Phillips	carolyn.phillips@gatfl.gatech.edu
------------------	--