Assistive Technology & Secondary Transition

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Project 10:
Transition Education Network
Region 1 Transition Representative
VISIONS 2010

Topics

- Introduction to Assistive Technology (AT)
- AT & Postsecondary Education
- AT & Employment
- AT & Independent Living
- AT Resources
- Closing
  - *Majority of content developed from NSTTAC's Assistive Technology & Secondary Transition Annotated Bibliography by Kelly R. Kelley, http://www.nsttac.org*

Introduction to AT

Definition

- "any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (IDEA 2004; 20 U.S.C. § 1400 [602]).
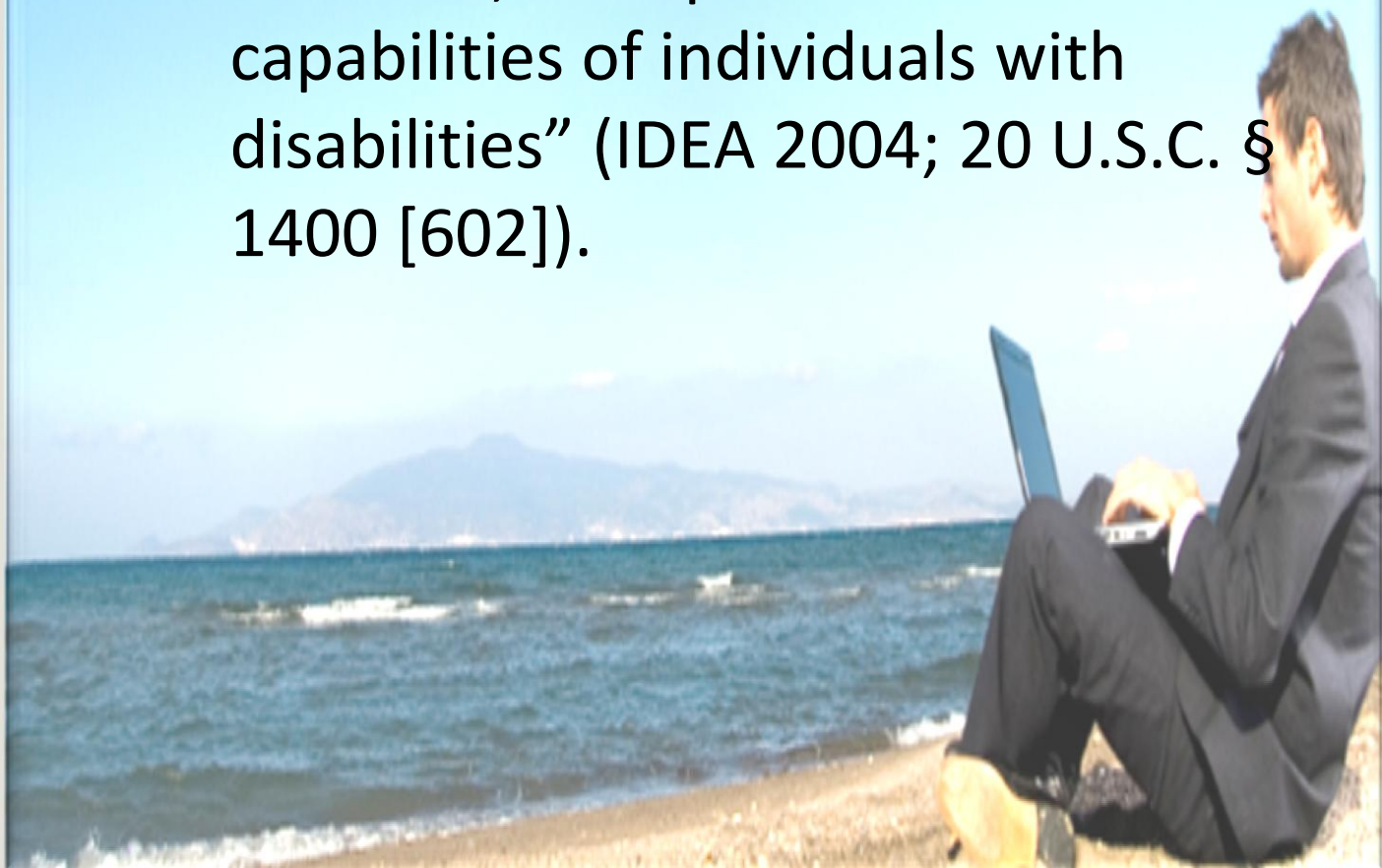
Introduction to AT, cont.

History

- Technology-Related Assistance for Individuals with Disabilities Act of 1988.

- Assistive Technology Act of 1998 replaced former act with focus of also addressing the assistive-technology needs of individuals with disabilities.

- Assistive Technology Act of 2004 reauthorized with the Assistive Technology program administered by the Department of Education.
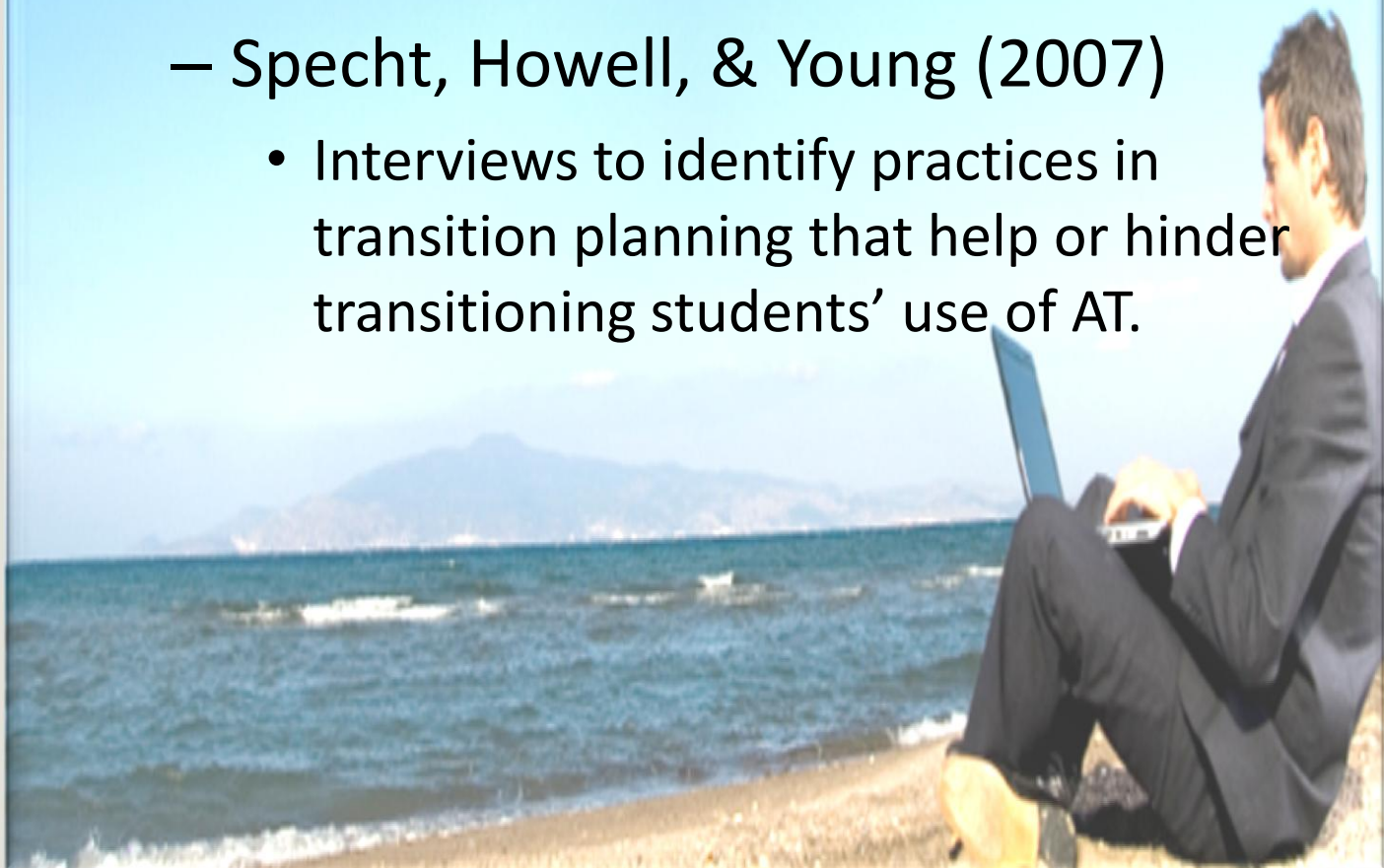
AT & Postsecondary Education

- Review of Literature – Method
  - Houchins (2001)
    - Survey to identify barriers & facilitators of students with disabilities transitioning from postsecondary education to adulthood.
  - Lamb (2003)
    - Interviews to examine specific roles & responsibilities of rehab counselors acquiring AT for students.
  - Martinez-Marrero, & Estrada-Hernandez (2008)
   - Described needs of college students with learning disabilities.

AT & Postsecondary Education

- Review of Literature – Method, cont.
  - Mull & Sitlington (2003)
    - Review to identify specific technology recommendations found in literature (1966-2000).
  - Specht, Howell, & Young (2007)
    - Interviews to identify practices in transition planning that help or hinder transitioning students' use of AT.
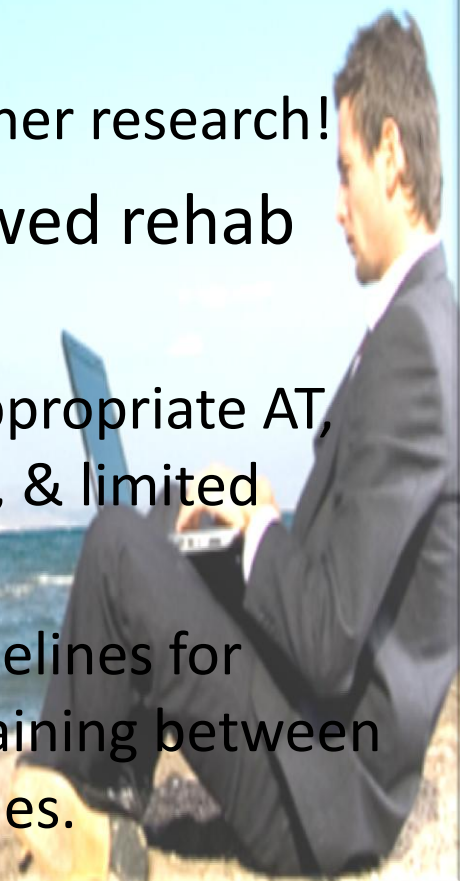
AT & Postsecondary Education

- Review of Literature – Method, cont.
  - Stodden, Conway, & Chang (2003)
    - Described current status of transition related to postsecondary education, graduation rates, & employment.
  - Webb, Patterson, Syverud, & Seabrook-Blackmore (2008)
    - Review to identify recommendations regarding self-determination & AT (1955-2006).
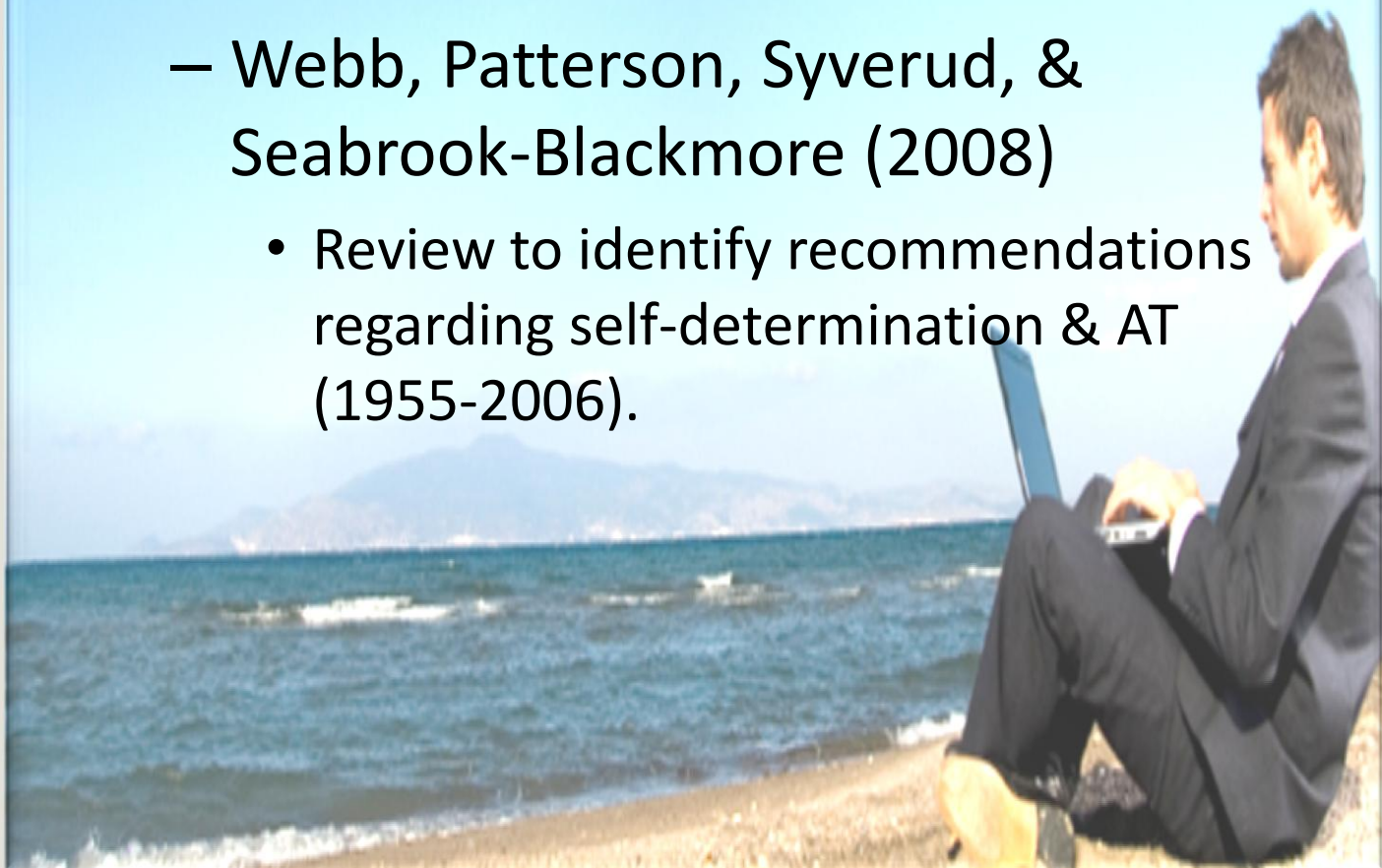
AT & Postsecondary Education

- Findings / Recommendations
  - Houchins (2001) – Surveyed tech specialists
    - Themes: increase AT instruction, improve self-determination, use best transition practices, & establish AT infrastructure.
    - Recommendations: further research!
  - Lamb (2003) – Interviewed rehab counselors
    - Themes: determining appropriate AT, limited knowledge of AT, & limited funding & access.
    - Recommendations: guidelines for purchasing AT & joint training between high schools & universities.

AT & Postsecondary Education

- Findings / Recommendations
  - Martinez-Marrero, & Estrada-Hernandez (2008)
    - Input Devices:
      - Large keyboards, touchscreens
    - Output Devices:
      - Large print, Braille embossers
    - Process Devices:
   - Programs for organizing thoughts, ideas

AT & Postsecondary Education

- Findings / Recommendations
  - Martinez-Marrerro, & Estrada-Hernandez (2008)
    1. Seven (7) Categories of ATPositioning
    2. Mobility
    3. Augmentative Communication
    4. Computer Access
    5. Adaptive Toys or Games
    6. Adaptive Environment
  - Recommendations:
    - Design instruction that considers the use of AT as an instructional tool for students with learning disabilities, e.g., Inspiration as a tool for writing!

AT & Postsecondary Education

- Findings / Recommendations
  - Mull & Sittlington (2003)
    - Specific AT Recommendations
      - **Spelling**: Spell-check, online dictionaries, word-prediction software, etc.
      - **Written Language**: notetaking, electronic keyboards, word processing, proofreading programs, voice recognition systems
      - **Reading**: screen enlarger, software that reads screens, talking dictionary
      - **Visual Tracking**: enlarged cursor, vary fonts & sizes, highlight text, use magnification
      - **Listening**: speech synthesizer
      - **Concentration**: headsets
      - **Math**: talking calculator
      - **Time Management**: electronic calendar
   - **Organization & Memory**: concept mapping
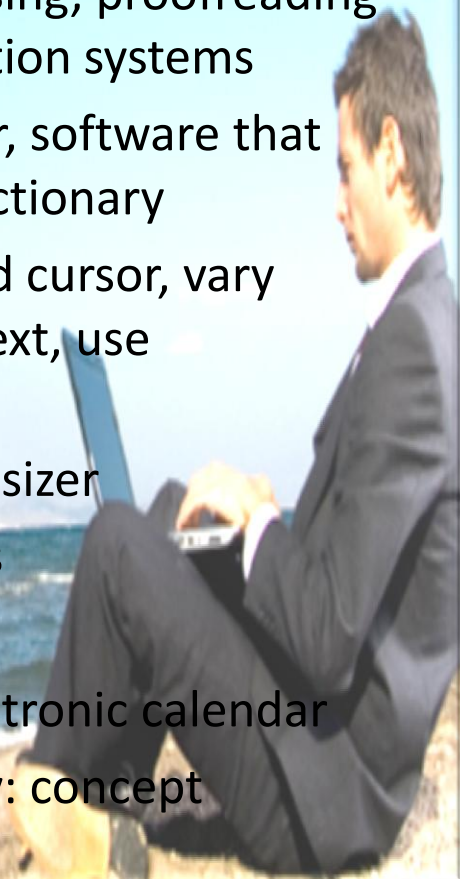
AT & Postsecondary Education

- Findings / Recommendations
  - Specht et al. (2007) – Interviewed 4 students, parents...
    - Themes: environment, training, assessment, & advocacy.
    - Recommendations: listen to students, their families, & teachers for AT needs!
  - Stodden et al. (2003) – next slide...
  - Webb et al. (2008) – review
    - Themes: self-determination strategies, social & interpersonal strategies, academic preparation, accommodations, & AT.
    - Recommendations: teachers expand knowledge & give students opportunities to practice using AT.

AT & Postsecondary Education

- Findings / Recommendations, cont.
  - Stodden et al. (2003)
    - Recommendations for improving transition and other supports between secondary & postsecondary schools such as:
      - Increasing the use of postsecondary-type supports in secondary schools;
      - Increasing carryover of technology between secondary & postsecondary schools;
      - Teaching students self-advocacy skills & educating them about their responsibilities in postsecondary education; and
      - Recognizing that supports are an investment in positive outcomes & productivity!
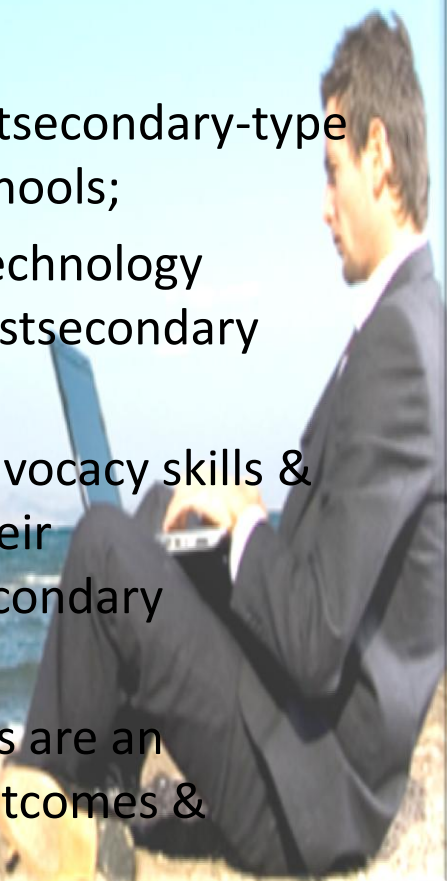
AT & Employment

- Review of Literature – Method
  - Greenan, Wu, & Black (2002)
    - Survey of Indiana employers' attitudes on hiring individuals with disabilities.
  - Heller, Allgood, Ware, Arnold, & Castelle (1996)
    - Study of 4 students with intellectual disabilities in Community-based Instruction (CBI) using dual communication boards.

  Riffel, Wehmeyer, Turnbull, Lattimore, Davies, & Stock (2005)
    - Study of 4 students with intellectual disabilities using a palm computer / Visual Assistant computer program.

AT & Employment

- Findings / Recommendations
  - Greenan et al. (2002) – survey of Indiana employers.
    - Results: 76% reported cost for remodeling & AT were major barriers.
    - Recommendations: need for more professional coordination & collaboration to satisfy AT needs !
  - Heller et al. (1996) – 4 students in CBI / dual communication boards
    - Results: all 4 students mastered criteria for initiating requests using gestures & dual communication boards
    - Recommendations: further research on use at actual job training sites !

Heller et al. (1996)

Phrases were taught to promote initiations.

Ex: student points to "I need" and "rake" to make work-specific requests. Turn-taking with directions/ responses, e.g., "Try again."

| Phrases |
| --- |
| "What job now?" |
| "Is this O.K.?" |
| "I need..." |
| "Help." |
| "What do I do with ?" |
| "How are you?" |
| "Watch,"   "Show you," |
| "Go do,"   "Try again" |
| "rake,"   "bag groceries," |
| "opening container" |

AT & Employment

- Findings / Recommendations, cont.
  - Riffel et al. (2005) – 4 students using Visual Assistant computer program.
    - Results: 3 of 4 students increased independence with tasks using Visual Assistant & reduced total number of support statements & prompting needed to complete tasks & increase productivity.
    - Recommendations: further research on use of AT & transition outcomes & independence !
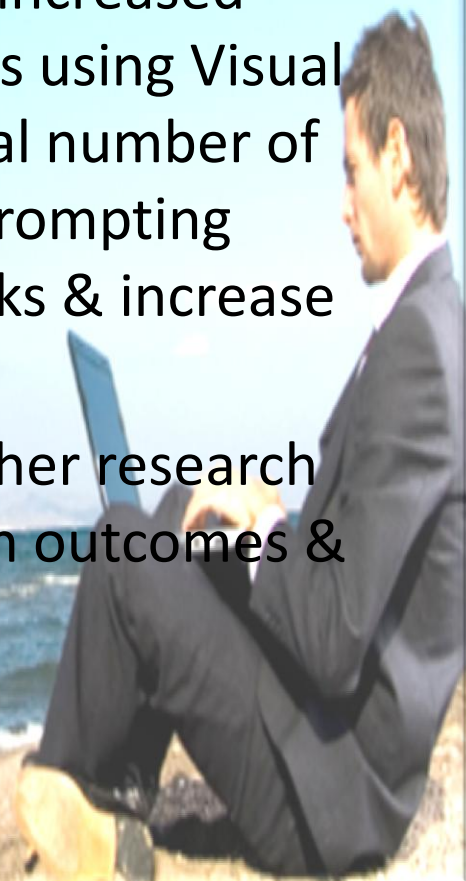
Riffel et al. (2005)

Visual Assistant Uses Your Own Digital Pictures & Recorded

Audio Files to Provide Step-by-Step, Self-directed Task

Training & Skill Maintenance
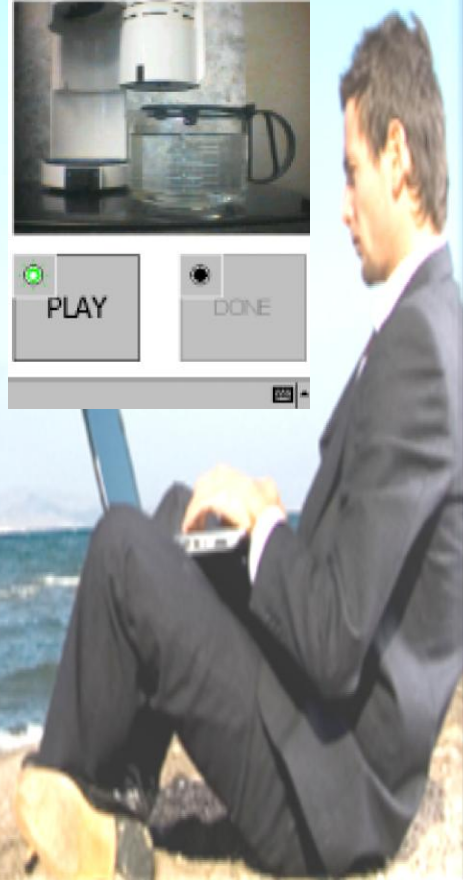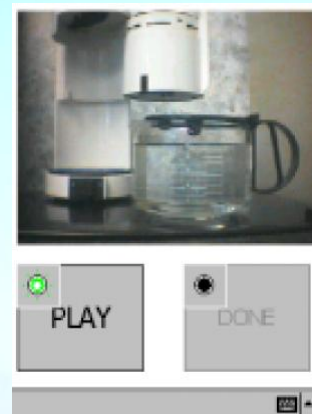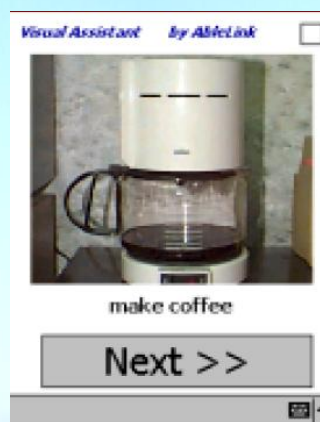
AT & Independent Living

- Review of Literature – Method
  - Johnson, Dudgeon, Kuehn, & Walker (2007)
    - Examined longitudinal data on AT use of adolescents & adults w/spina bifida.
  - Mechling (2007)
    - Review of literature on AT & self-management (1990-2005).
  - Alper & Raharinirina (2006)
    - Reviewed barriers to AT for accessing curriculum & acquiring transition skills.
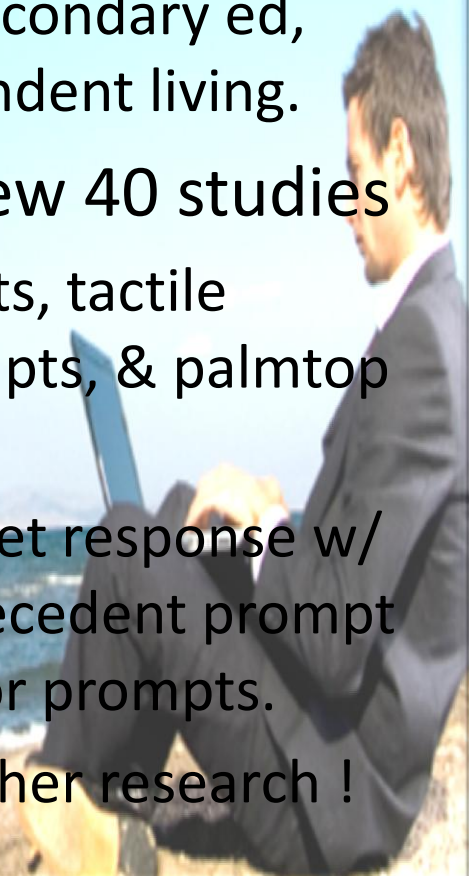
AT & Independent Living

- Review of Literature – Method, cont.
  - Nochajski, Oddo, & Beaver (1999)
    - Described the Technology & Transition model, including how AT can be incorporated into IEP / transition plan.
  - Parette & Peterson-Karlan (2007)
    - Distinguished between AT, IT, & UDL.
  - Wehmeyer, Palmer, Smith, Parent, & Davies (2006)
    - Meta-analysis of single-subject studies on use of AT by individuals w/ intellectual disabilities (1997-2003).
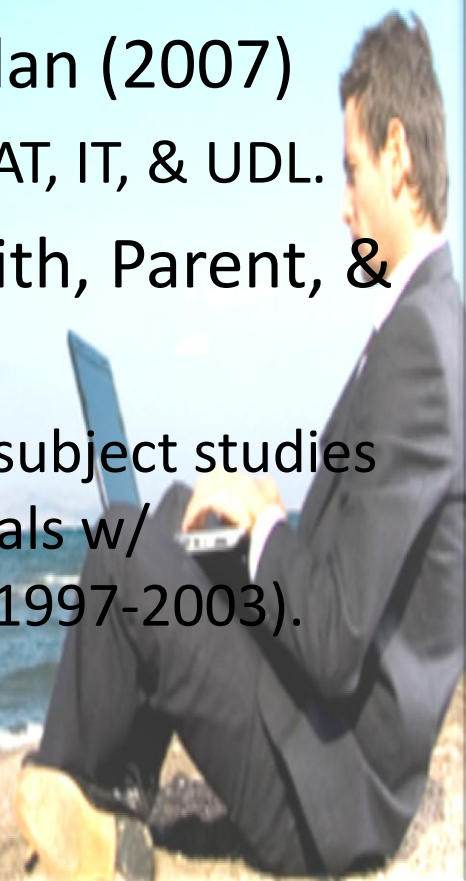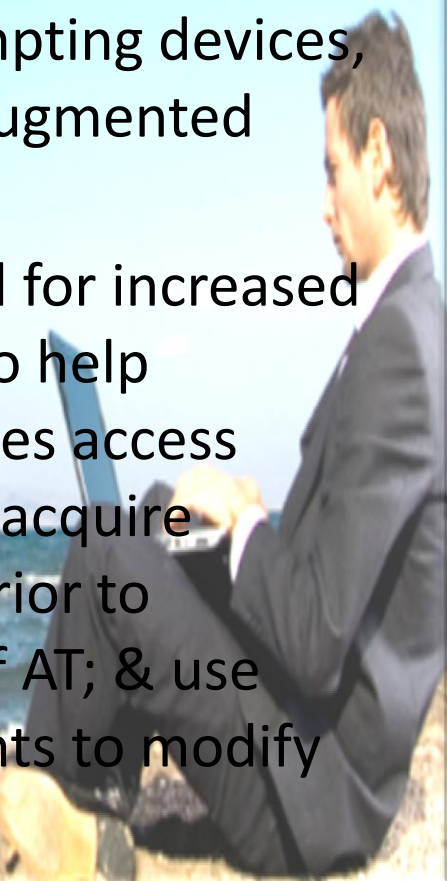
AT & Independent Living

- Findings / Recommendations
  - Johnson et al. (2007) – longitudinal
    - Results: Individuals w/spina bifida have greater need for AT (e.g., wheelchairs, braces, walking aids, digital devices, & personal care adaptations) to increase independence in postsecondary ed, employment, & independent living.
  - Mechling (2007) – review 40 studies
    - Themes: picture prompts, tactile prompts, auditory prompts, & palmtop personal computers.
    - Results: increase in target response w/ self-operated AT as antecedent prompt & reduction of instructor prompts.
    - Recommendations: further research !

AT & Independent Living

- Findings / Recommendations, cont.
  - Alper & Raharinirina (2006)– review
    - IVs: videotapes/discs, writing/game software, computer-based study tools, multi-media, speech recognition/synthesis software, prompting devices, palmtop computers, & augmented communication devices.
    - Recommendations: need for increased awareness for using AT to help individuals with disabilities access general ed curriculum & acquire transition skills; assess prior to selection & during use of AT; & use individualized assessments to modify or customize AT !

AT & Independent Living

- Findings / Recommendations, cont.
  - Nochajski et al. (1999)
    - Technology & Transition model:
      - Collaborative Teaming, ecological curriculum, & interagency linkages.
      - AT computer tools, e.g., lending libraries, evaluation & training, coordination & collaboration, & transition websites.
      - Role of OTs as experts in assessment & training w / AT.
  - Parette & Peterson-Karlan (2007)
    - Differences between AT, IT, & UDL
    - AT & IEP Development
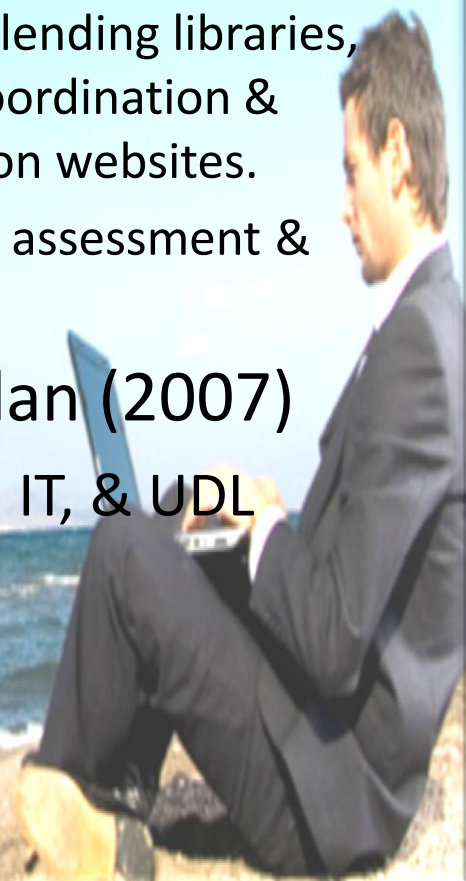
AT Compensates for Functional Performance Gaps and Creates Floor of Opportunity for Participation
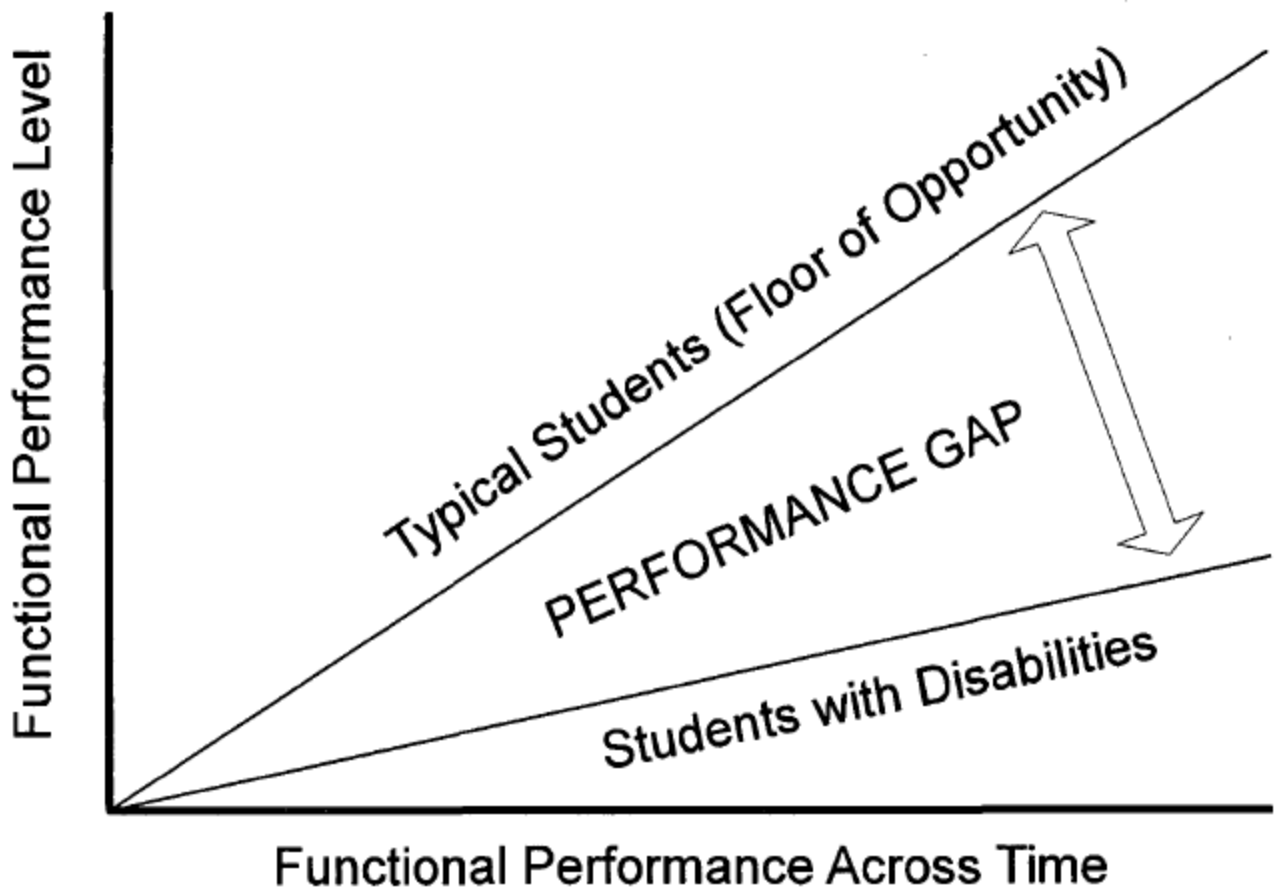## (Parette & Peterson-Karlan, 2007)

Figure 1. AT compensates for functional performance gaps and creates a 'floor of opportunity' for participation. © 2007, SEAT Center. Used with permission.

AT, IT, & UDL
(Parette & Peterson-Karlan, 2007)

- AT compensates …

- IT: Instructional Technology
  - Application of "scientific knowledge about human learning to practical tasks of teaching & learning," p.390

  - Three outcomes for instruction: effectiveness, efficiency, & appeal.
    - Plan, prepare, instruct, & assess.

- UDL: Universal Design for Learning
  - Unlike AT, UDL is not designed for single learner; instead, anticipates needs & styles of a diverse range of learners.

AT & IEP Development
## (Parette & Peterson-Karlan, 2007)

1. PLAAFP: Present Levels of Academic Achievement & Functional Performance

2. Postsecondary & Annual Goals

3. Placement Alternatives

4. Appropriate Supports & Services, including existing AT

5. AT & Instructional Interventions
   1. What AT might be needed within various academic or life skill activities ?
   2. Is AT selected actually effective ?

AT & Independent Living

- Findings / Recommendations, cont.
  - Wehmeyer et al. (2006) – meta-analysis
    - 183 (40%) single-subject / 411 articles selected used a device that had at least one Universal Design (UD) feature.
    - Palmtop computers were the only technology group determined "Highly Effective."
    - Recommendations: Research on impact of specific types of Universal Design features on AT for people with intellectual disabilities.
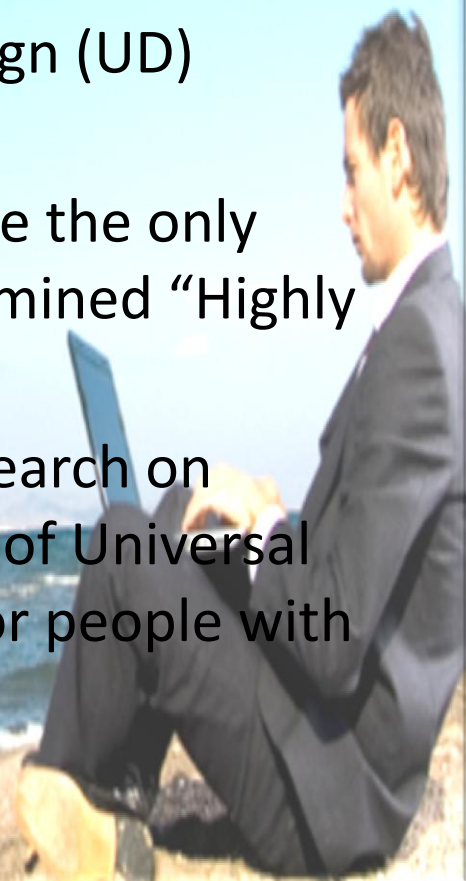
Universal Design Features

(The Trace Center in Wisconsin, as cited by Wehmeyer et al., 2006, p. 22)

1. Equitable use (36 or 7.9%)

2. Flexibility in use (121 or 26.5%)

3. Simple & intuitive use (35 or 7.7%)

4. Perceptible information (15 or 3.3%)

5. Tolerance for error (26 or 5.3%)

6. Low physical effort (4 or 5.4%)

7. Size & space for approach & appropriate use (0)

Wehmeyer et al. (2006)

Technology Type by Study Participant

Technology Type	Frequency	%
Computer–Educational	123	27.0
Augmentative Communication	74	16.2
Auditory Prompting Device	54	11.8
Video Device	45	9.9
Switches	36	7.9
Video Tape	23	5.0
Electronic Technology	22	4.8
Computer–Recreational	12	2.6
Computer-Assisted Electronics	12	2.6
Palmtop Computer–Audio Vibrator	10	2.2
Visual Orientation Robot	8	1.8
Microswitch and Tape Recorder	8	1.8
Voice-Recognition Software–Environment Control	6	1.3
Appliances	6	1.3
Palmtop Computer	4	.9
Television	4	.9
Microphone	4	.9
Interactive Video Disk	3	.7
Optic Sensors	2	.4

Wehmeyer et al. (2006)

PND Scores by Technology Group

Technology Group	Mean PND Score (SD)
Palmtop Computer	0.99 (.002)
Auditory Prompt/Device	0.94 (.10)
Electronic and Information Technology	0.96 (.16)
Video Device (TV, interactive disk)	0.82 (.23)
Augmentative Communication	0.81 (.27)
Computer	0.71 (.33)
Home Appliances	0.70 (.42)
Voice Recognition Software for Environmental Control	0.67 (.17)
Switches	0.60 (.37)

AT Resources

Sample AT for Secondary Transition

Pulse Smart Pen

2 GB captures over 200 hours of recorded audio; record & link audio to what you write; listen to recordings by tapping on what you wrote; search & share your notes from your computer!

- Recording Keychain
  - Digital recording without tape; record up to 10 seconds of message.

Florida Diagnostic and Learning Resources System (FDLRS)

- http://www.paec.org/fdlrsweb/
  - Provides diagnostic &instructional support services to district ESE programs & families of students with exceptionalities statewide.
    - Regional and statewide support includes 19 Associate Centers.
    - Each Center includes specialists in the areas of Child Find, Parent Services, Human Resource Development (HRD), and Technology.
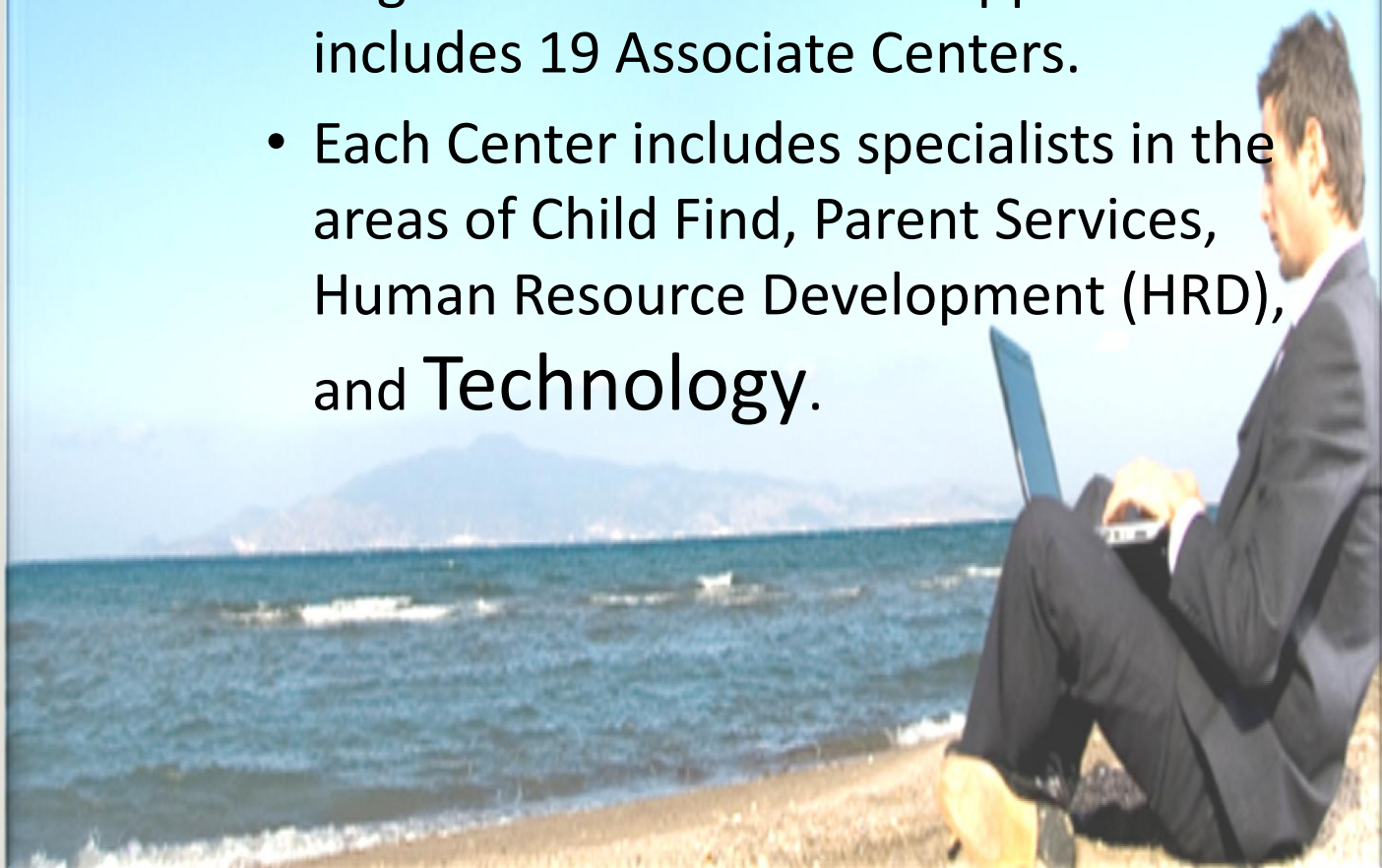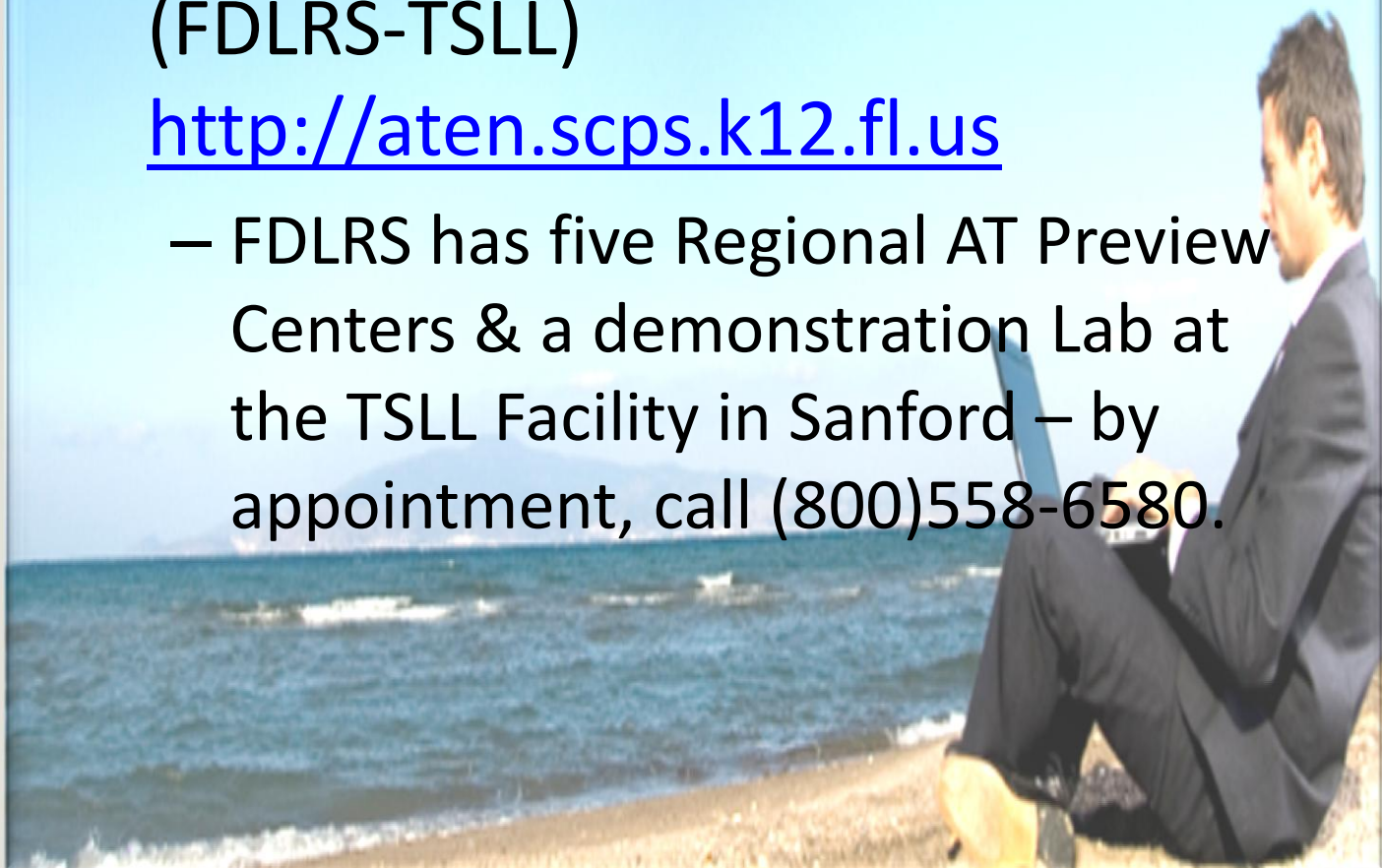
FDLRS, cont.

- Technology Coordinating Unit (FDLRS/Tech) http://www.paec.org/fdlrstech

- Technology State Loan Library (FDLRS-TSLL) http://aten.scps.k12.fl.us
  - FDLRS has five Regional AT Preview Centers & a demonstration Lab at the TSLL Facility in Sanford – by appointment, call (800)558-6580.

Exploring New Territories c/o FDLRS/PAEC

- Exploring New Territories: Technology Resources for Struggling Students & Students with Disabilities
    - http://www.paec.org/fdlrstech/handouts/exploringnewterritories2010.pdf
    - *Hardcopy of 2010 version should be available from your local FDLRS later this year!*

- Florida Alliance for Assistive Services and Technology (FAAST) http://www.faast.org

    – Hands on assistive technology demonstrations & trainings

    – Financing for assistive technology purchases

    – Assistive device lending programs

    – Community outreach to rural & underserved groups

    – Accessible, affordable housing

    – Advocacy & education on consumer choice

Florida Assistive Technology Achievement Program

- The Learning through Listening Project, Florida division of Recording for the Blind & Dyslexic (RFB&D).

- This program makes available the following to individual schools serving eligible students with print disabilities:
  - 1 School Membership Level 2 (1year)
  - 2 Classic X + Desktop Players and 1 Victor Stream Portable Player
  - Online Training & Resources
  - FREE student membership for complementary at-home use
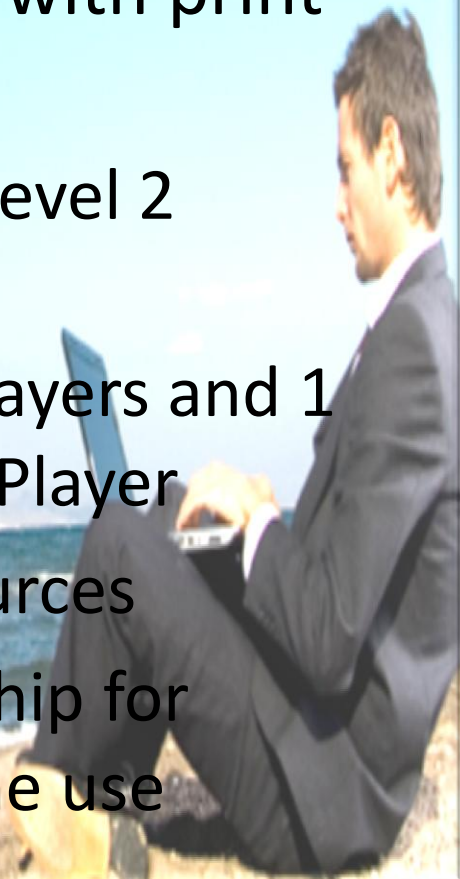
# Florida Assistive Technology Achievement Program, cont.

- Access to extensive library of audio textbooks & literature titles
- Online catalog subject/keyword searching
- 24/7 member services online & phone support
- Free web-based teacher training & classroom support materials
- Free teacher support Web site at www.LearningThroughListening.org

Eligible students with print disabilities...

...include those students who have been identified by a competent authority as having a physical disability (orthopedic impairment) which prevents the student from being able to:

– hold printed books or turn their pages,

– students with visual impairments, &

– students with a reading disability resulting from organic dysfunction & of sufficient severity to prevent their reading printed material in a normal manner.
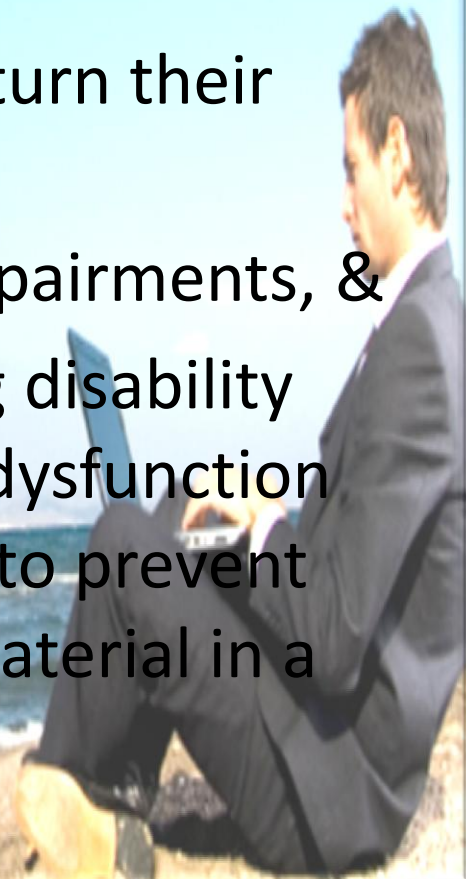
Eligible students may have…

…either an individual educational plan (IEP) or a Section 504 plan.

- Please note that this program supplements and does not supplant the requirements for school districts to provide services for National Instructional Materials Accessibility Standard (NIMAS)-eligible students (students with qualifying print disabilities that have IEPs).

- The program expires on June 30, 2010.
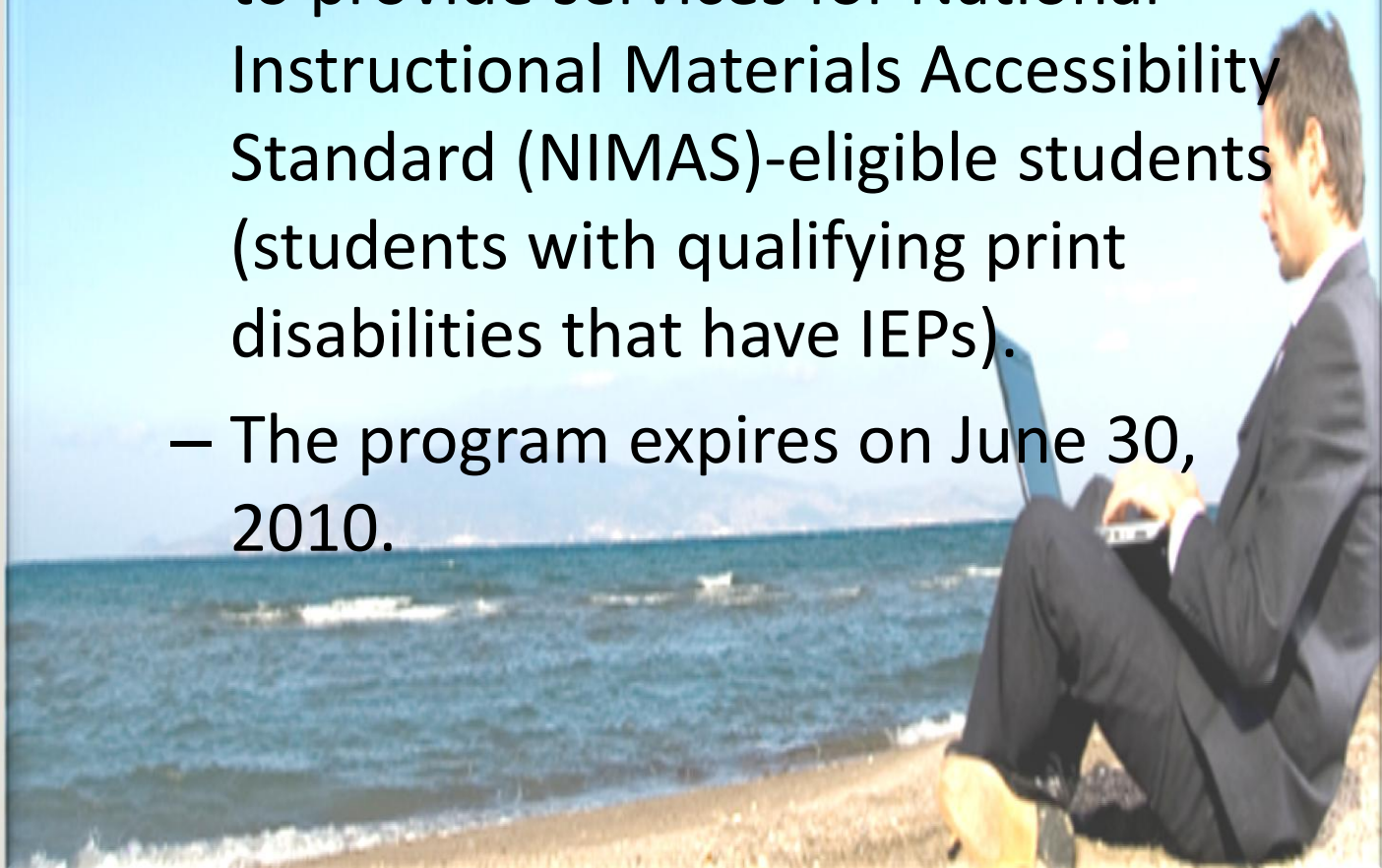
FSAP Contact Information

- Additional information may be found in flyer attached to Feb. 5, 2010 BEESS Weekly

- Filename: Florida State Achievement Program.pdf – *see handout provided today!*

- Link: www.LearningThroughListening.org
  - Liliana Acosta, at lacosta@rfbd-florida.org or (786) 417-9536
  - Dawn Saunders, at Dawn.Saunders@fldoe.org

FIMC-VI:
The Florida Instructional Materials Center for the Visually Impaired

- FIMC-VI is a statewide resource center to assist schools in obtaining specialized materials for students with VI enrolled in Florida's public & private schools & teachers in those schools, both ESE & general educators of students with VI.

- There is no charge for any services offered by FIMC-VI, which include:

  - Large print, Braille, recorded, & computer compatible texts; assessments; Braillewriters; adapted cassette recorders & digital playbacks; electronic paperless Braillewriters; technical & professional materials; regional training & new teacher orientation; and on-site technical assistance & training.

- http://www.fimcvi.org/
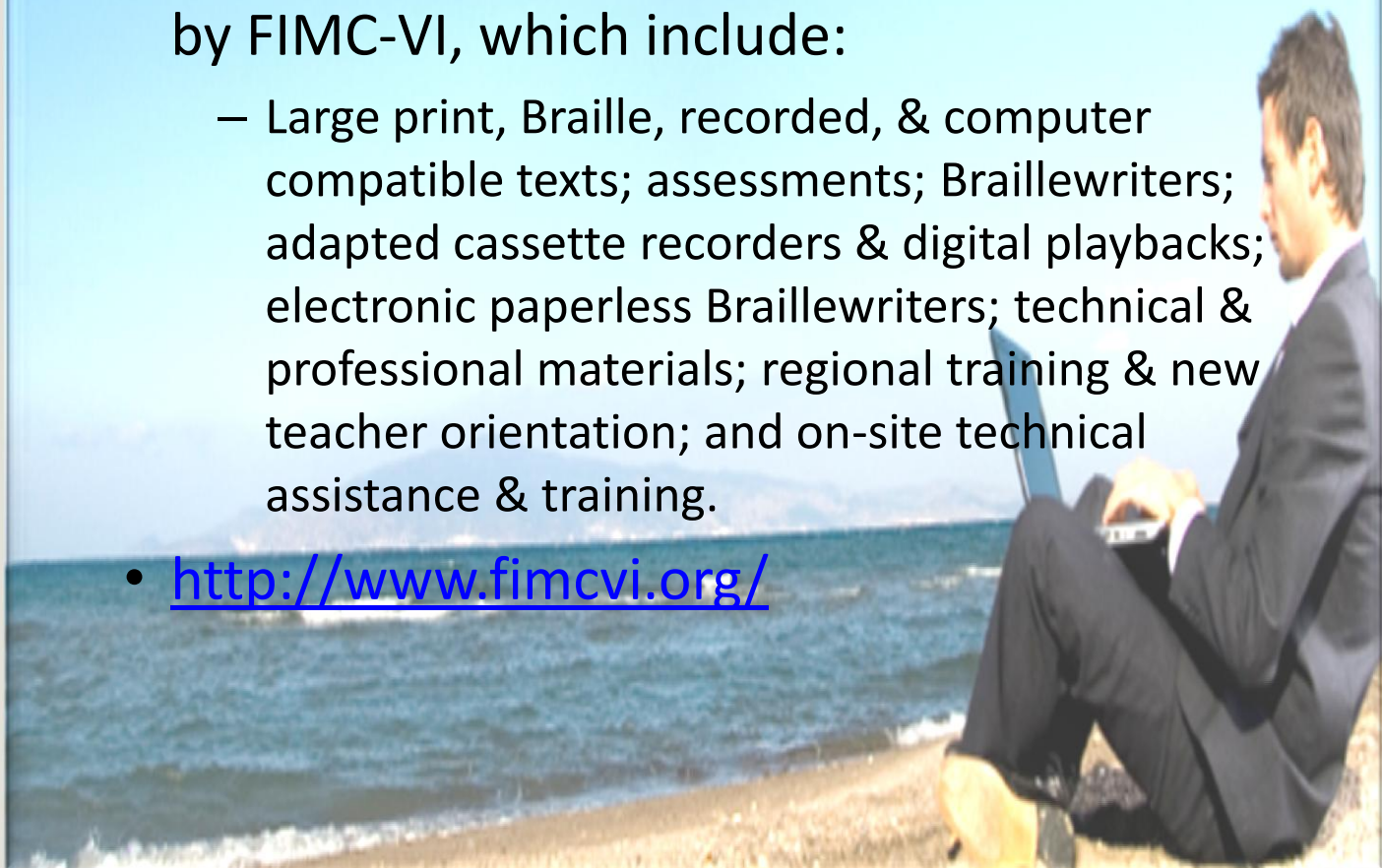
CITEd Research Center

- Offers evidence-based, promising, & emerging practices based on the latest research.

  - Explore how technology can be used to enhance instruction with an emphasis on students with special needs.

  - Browse research and its implications for your classroom, school, and district.

  - http://www.cited.org/index.aspx?page_id=13
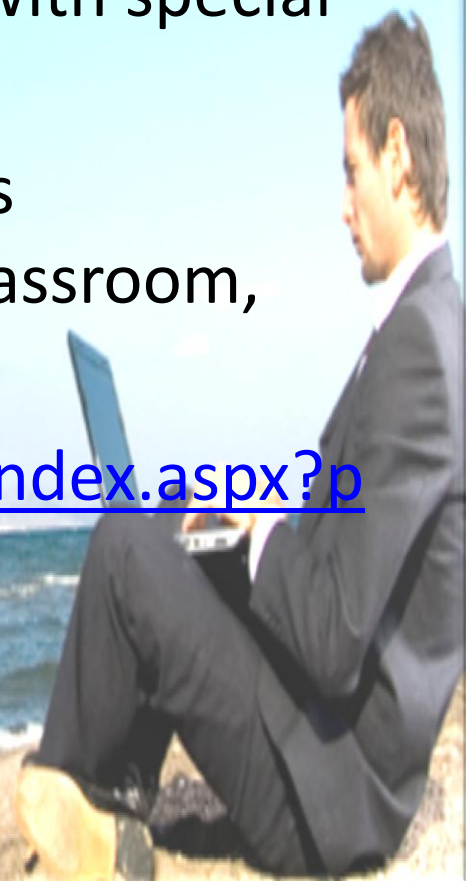
FCTD Resource Review Database

- Hundreds of assistive & instructional technology resources identified, reviewed, & annotated.

- Direct links to each resource provided.

- Target search by entering a **key word or phrase** in the search or scan through the resources.

  - The filters beneath the search box allow further customization by **topic, disability, & material type.**

- http://www.fctd.info/resources
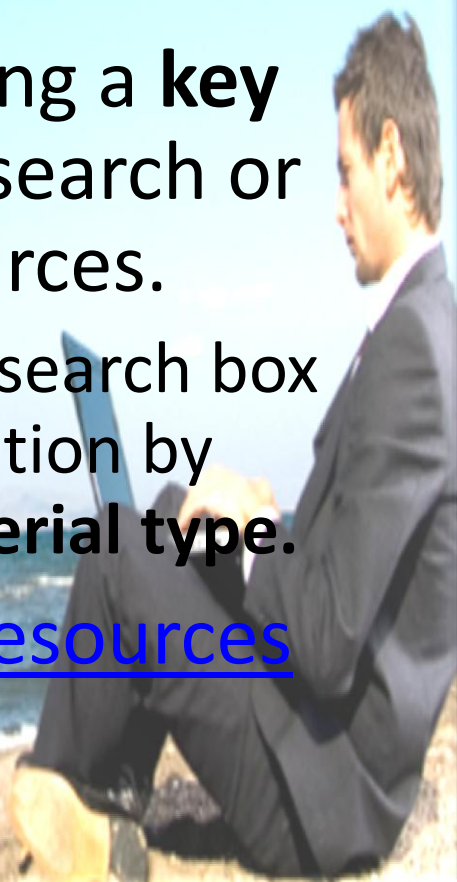
National Center for Technology Innovation

- Information &resources on equipment & product systems
  - Increasing, maintaining, and/or improving independence.
- Free webinars on various AT topics
  - New learning & assistive technologies described, trends & uses of portable technology.
- Research articles on family centered decision making
  - With assistive technology, technology reviews, & assessments.
- Other links such as
  - Don Johnston Inc., WebABLE, TechConnect, Quality Indicators of Assistive Technology Consortium, & Ability Hub.
- http://dev.nationaltechcenter.org/index.php/category/assistive-technology

AT & Secondary Transition – Select Resources
VISIONS 2010, Lori A. Garcia, Ph.D., Project 10: Transition Education Network

State Resources

- Florida Alliance for Assistive Services and Technology (FAAST), http://www.faast.org
- Florida Assistive Technology Achievement Program, Learning Through Listening, www.LearningThroughListening.org
- Florida Instructional Materials Center for the Visually Impaired & Florida NIMAS, http://www.fimcvi.org/
- Resource Materials and Technology Center for the Deaf and Hard of Hearing
- http://www.fsdb.k12.fl.us/rmc/

FDLRS: Florida Diagnostic Learning Resources System, http://www.paec.org/fdlrsweb/

- Exploring New Territories: Technology Resources for Struggling Students & Students with Disabilities, http://www.paec.org/fdlrstech/handouts/exploringnewterritories2010.pdf
- Technology Coordinating Unit (FDLRS/Tech), http://www.paec.org/fdlrstech
- Technology State Loan Library (FDLRS-TSLL), http://aten.scps.k12.fl.us

National Resources

- AT Cycle Toolkit, An AT support toolkit from Johns Hopkins University, http://olms.cte.jhu.edu/olms/output/page_site.php?pageID=9514&siteID=1567
- The Assistive Technology Continuum by Judith Sweeney, http://www.onionmountaintech.com/
- CITeD: Center for Implementing Technology in Education Research Center, http://www.cited.org/index.aspx?page_id=13
- FCTD: Family Center on Technology & Disability Resource Review Database, http://www.fctd.info/resources
- National Center for Technology Innovation, http://dev.nationaltechcenter.org/index.php/category/assistive-technology
- *NSTTAC: National Secondary Transition Technical Assistance Center, http://www.nsttac.org*
  - *The majority of content for this presentation was developed from NSTTAC's Assistive Technology & Secondary Transition Annotated Bibliography by Kelly R. Kelley, http://www.nsttac.org/products_and_resources/AssitiveTechnology.aspx*

References - Definition & History

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Individuals with Disabilities Education Improvement Act of 2004, 20 U.S.C. 1400 et seq. (2004)

Technology-Related Assistance for Individuals with Disabilities Act of 1988, Pub. L. No. 100-407.

Postsecondary Education

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Webb, K. W., Patterson, K. B., Syverud, S. M., & Seabrooks-Blackmore, J. J. (2008). Evidenced based practices that promote transition to postsecondary education: Listening to a decade of expert voices. Exceptionality, 16, 192-206.

Employment

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