Assistive Technology (AT)

Brief Introduction
Assistive technology (AT) refers to equipment that is used by an individual with a disability to increase his or her functional capabilities. Many students with autism require strategies, equipment, and/or support to reach their potential (Schlosser, Blischak, Belfiore, Bartley, & Barnett, 1998). Research has shown that one such means of support, assistive technology, is effective for students with autism spectrum disorder.

Description
According to the IDEA Amendment (2004), assistive technology (AT) is a broad term used to describe any item, piece of equipment, or product system that is used “to increase, maintain or improve the functional capability of a child with a disability.” Furthermore, IDEA recognized that AT is a critical instrument in meeting the educational and overall developmental needs of students with disabilities in school (Smith, Murphy-Herd, Alvarado, & Glennon, 2005). AT devices can be electronic or non-electronic. Three main types of AT, ranging from “low” and “mid” to “high” technology, can be used with learners with autism. Each type is described below.

• “Low” technology. These strategies do not involve any type of electronic or battery-operated device. Such strategies typically include low-cost and easy-to-use equipment, such as dry-erase boards, clipboards, laminated photographs, photo albums, three-ring binders, Picture Exchange Communication System (PECS), etc. The strategies can be used to enhance expressive and receptive communication skills with autism.

• “Mid” technology. These strategies use battery-operated devices or basic/simple electronic devices. Examples of “mid” technology devices are tape recorders, voice output devices, timers, and calculators. They are primarily used as a means to support expressive communication and enhance classroom participation, focus attention on various skill areas, and assist in the development of social skills.

• “High” technology. These strategies are complex technological support strategies. They typically involve high-cost equipment such as computers and adaptive hardware (e.g., touch window, software, trackballs), accessory equipment (e.g., digital cameras, scanners), video cameras, and complex voice output devices.

It is essential to carefully train educators and learner on the use of AT devices to ensure that they are used correctly. When needed, AT should be incorporated into every aspect of daily living in order to improve the functional capabilities of learners with autism. Thus, it is important to consider that all AT devices, from “low” technology to “high” technology, should always be individualized to meet the unique needs of any learner with autism. Most important, the optimal goal of AT strategies is to increase the learner’s independent functioning skills by decreasing the amount of direct support needed from another person.

Research Summary: Assistive Technology (AT)

<table>
<thead>
<tr>
<th>Ages</th>
<th>Skills/Intervention Goals</th>
<th>Settings</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>3–21 years</td>
<td>Speech/language/communication (inclusive), academics,</td>
<td>Computer-based</td>
<td>The NPDC identifies technology-aided intervention as a process through</td>
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<td>emotion recognition, executive abilities, social</td>
<td>instruction</td>
<td>which an intervention is delivered. Thus, NPDC does not categorize</td>
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<td>skills, theory of mind</td>
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<td>assistive technology as a specific intervention practice. The NAC</td>
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<td>guidelines identify augmentative and alternative communication</td>
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<td>devices as an emerging intervention.</td>
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*The information found in the Research Summary table is updated yearly following a literature review of new research and this age range reflects information from this review.
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Research


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Individuals with Disabilities Education Improvement Act, 20 USC § 1400 (2004).


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Resources and Materials

Assistive Technology Internet Modules (ATIM): http://www.atinternetmodules.org


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Steps for Implementation

A. Pre-Assessment
   i. Identify the AT assessment team members.
   ii. Identify learner strengths, current levels of performance, and learner preferences.
   iii. Review available speech/language, occupational therapy, and physical therapy services.
   iv. Review AT tools and features that will best fit the learner’s needs.
   v. Identify the components for a successful AT implementation plan.

B. Assessing the Learner’s Needs for Assistive Technology
   i. Determine the learner’s specific AT needs
   ii. Identify specific tasks that are difficult or impossible at this time and which the learner needs
       support to accomplish independently.
   iii. Describe special strategies, accommodations, and tools currently being used.
   iv. Identify and describe any continuing barriers to independence.
   v. Describe new or additional technology to be tried to address the continuing barriers.

C. Determine the Best Way to Gather Data
   i. Include information about the learner specific to areas of concern, special needs, current
      achievement, interests and goals.
   ii. Include information related to environments and anyone who is around the learner, regarding
      ways in which the environment contributes to how the learner is expected to learn and grow.
       • Include information that can be used to identify environmental supports and
         training that will help the learner and contribute to planning implementation
         and evaluation of effectiveness of these supports.
   iii. Identify specific tasks (in detail) that are currently required of the learner, or that will be required
       in the near future. Include specific tools that may be needed or may play a critical role in planning
       implementation and evaluation of effectiveness.

D. Tool selection
   i. Based on data, describe the tools, or functions of tools that are needed by the learner.
   ii. For each tool, include descriptors and functions that are related to specific learner needs.

E. Develop an AT plan that includes the following information:
   i. Activities that provide embedded opportunities for the learner to develop and use priority skills.
      These will include when, where, and with whom these activities take place.
   ii. Identify existing barriers.
   iii. Identify assistive technology tools that will contribute to removing barriers to performance.
   iv. Determine additional strategies, accommodations, or modifications that will be used to encourage
       learner participation in activities.
   v. Determine when and how tools and strategies will be used within the activity.
   vi. Describe cues to be used to support learning and success. Include strategies for fading cues.
   vii. Describe major areas of expected change (communication, participation and productivity) and
        ways in which change is expected to occur (independence, rate, accuracy, etc.).
   viii. Describe successful participation: what it looks like, ways to measure success, and minimum
        performance criteria for success.
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ix. Determine factors that contribute to success.

x. Determine how “success” will be captured in data: what data; when collected; by whom collected; and by whom will the data be analyzed.

xi. Determine conditions under which plan will be modified based on data.
   • How will modifications be determined?
   • Who will determine modification?
   • If change is indicated, will it be a change in the tool(s), strategies, cues, skills, tasks, or other dimension?

xii. Determine action steps by everyone on the AT team.
   • What will be done?
   • By whom?
   • By when?
   • Evidence of completion of steps.

Steps adapted from SETT Framework, developed by Joy Zabala, available in the Assistive Technology Internet Modules (ATIM) from the Autism Internet Modules that are a component of the Ocali project of Central Ohio. Email for AIM: aim_info@ocali.org ATIM login: http://www.atinternetmodules.org