

IEDA

INCLUSIVE EDUCATION: Ensuring participation
of persons with disabilities in non-formal adult
education

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Module 2: Assistive Technology in Educational Context: Types and Implementation

Curriculum on Education on implementation of assistive
technologies in adult education



Module 2: Assistive Technology in Educational Context: Types and Implementation

Module 2 covers the topic of Assistive technology in education. This can range from "high tech" technology, such as electronic devices, to "low tech" devices such as a pencil grip, supportive seat or a simple switch.

Assistive technology can support teachers to provide teaching and learning that is accessible to all students. Assistive technology supports students with diverse learning needs within an inclusive learning environment by:

- delivering information to students in a way that is more appropriate to their needs
- changing the way a student can interact with the curriculum and their environment
- providing a more appropriate and accessible way for students to demonstrate their knowledge and understanding of the curriculum.

Assistive Technology in Education

Assistive Technology (AT) plays a crucial role in the educational context by providing tools and strategies that support students with disabilities in their learning and academic endeavours. These technologies are designed to enhance access to information, facilitate communication, promote participation, and ultimately create a more inclusive and equitable learning environment. Here's a closer look at types of assistive technology in education and their implementation:

Types of Assistive Technology in Education:

1. **Text-to-Speech Software:** This type of software converts written text into spoken words, making it accessible to students with visual impairments, dyslexia, or other reading difficulties.
2. **Screen Readers:** Screen readers audibly convey the content displayed on a computer screen, enabling visually impaired students to access digital information.
3. **Magnification software:** Magnification software enlarges the text and graphics on the computer screen, making it easier for partially sighted users to

read and navigate through digital materials. Many magnification programs also offer colour contrast and other customisation options.

4. **Speech Recognition Software:** Speech recognition technology translates spoken words into written text, helping students who struggle with writing due to motor or learning disabilities.
5. **Communication Devices:** These devices aid nonverbal students in expressing themselves by generating speech or displaying messages through symbols or text.
6. **Electronic Braille Displays:** These tactile devices convert digital text into braille, enabling visually impaired students to read and navigate digital content.
7. **Word Prediction Software:** Word prediction tools anticipate and suggest words as students type, assisting those with spelling difficulties or motor impairments.
8. **Mathematics Assistive Technology:** Specialized software helps students solve math problems, convert equations into spoken or tactile forms, and visualize mathematical concepts.
9. **Audio Books and E-Texts:** Audiobooks and electronic texts provide alternatives to traditional reading materials, supporting students who struggle with print materials.
10. **Adaptive Keyboards and Mouse Devices:** These input devices are designed to accommodate students with motor impairments, offering larger keys, alternate layouts, or hands-free operation.
11. **Note-Taking Apps:** These apps help students organize and manage their notes by providing various formats, including text, audio, and visual annotations.

For more details, see the chapter **Assistive technologies for different types of disabilities** in Handbook.

Benefits and practical use of AT in non-formal adult education for people with disabilities

The utilization of assistive technology in non-formal adult education brings forth a multitude of benefits that significantly enhance the learning experience for individuals with disabilities. Firstly, these technologies break down barriers to access

by providing tailored support, ensuring that learners can fully engage with educational content regardless of their disabilities. Tools such as screen readers, adaptive software, and alternative input devices empower learners to interact with learning materials, complete assignments, and participate in discussions with newfound independence. This fosters a sense of inclusivity and equality within the learning environment, allowing individuals with disabilities to fully realize their potential.

Practical use of assistive technology in non-formal adult education involves a seamless integration of various tools and resources. Online platforms equipped with accessibility features accommodate learners with visual, auditory, cognitive, and motor impairments. Video content with accurate captions and transcripts ensures that information is accessible to those with hearing impairments, while adjustable font sizes and customizable color schemes cater to diverse visual needs. Additionally, communication aids like speech-generating devices or AAC apps facilitate interaction and engagement for learners with speech or communication challenges, enabling them to express their thoughts and ideas effectively.

Furthermore, assistive technology promotes personalized learning experiences in non-formal adult education. These tools allow learners to adapt their learning environment to their preferences, pace, and capabilities. For instance, individuals with dyslexia can benefit from text-to-speech applications that convert written content into spoken words, making reading more accessible. Similarly, learners with mobility impairments can utilize voice recognition software to navigate digital platforms and complete assignments. This level of customization ensures that each learner's unique strengths and challenges are acknowledged and accommodated, fostering a supportive and inclusive learning environment that encourages self-confidence and active participation.

Implementation of Assistive Technology in Education

1. **Assessment of Needs:** The process starts with identifying students' needs and determining the most suitable assistive technology based on their disabilities and challenges.
2. **Collaboration:** Collaboration among educators, special education professionals, parents, and students is essential to ensure that the chosen assistive technology aligns with the student's goals and educational plan.

3. **Individualized Education Plan (IEP):** For students with disabilities, the IEP outlines the specific assistive technology tools, services, and accommodations they require to succeed in the classroom.
4. **Training and Support:** Students, teachers, and support staff need proper training to effectively use and integrate assistive technology into the learning process.
5. **Accessibility of Materials:** Schools must ensure that digital content and learning materials are accessible to students using assistive technology, including compatibility with screen readers and alternative formats.
6. **Regular Evaluation:** The effectiveness of assistive technology should be continually assessed and adjusted to match students' evolving needs and progress.
7. **Inclusive Environment:** Integrating assistive technology fosters an inclusive classroom environment where all students can learn and engage together.
8. **Awareness and Education:** Raising awareness about the benefits of assistive technology among educators, parents, and students helps ensure its widespread adoption.
9. **Collaboration with Developers:** Educators can provide valuable feedback to developers, influencing the design and functionality of new assistive technology tools.

Benefits of assistive technology for students with diverse learning needs

Assistive technology (AT) offers a multitude of benefits for students with diverse learning needs, helping them overcome challenges and succeed in their educational journey. Here are some key benefits that assistive technology provides to students with diverse learning needs:

1. **Accessibility:** Assistive technology makes learning materials and resources accessible to students with various disabilities, ensuring that they can engage with the curriculum on an equal footing.
2. **Personalized Learning:** AT allows for tailored learning experiences that cater to individual strengths, preferences, and learning styles, fostering a more engaging and effective learning process.

3. **Independence:** Assistive technology empowers students to take control of their learning. It enables them to complete tasks, access information, and engage in activities independently, boosting their confidence and self-esteem.
4. **Communication:** For students with speech or communication impairments, AT tools like communication devices, speech synthesis software, and symbol-based communication systems provide means to express themselves and interact with peers and educators.
5. **Reading and Writing Support:** AT tools such as text-to-speech software, word prediction, and spell checkers assist students with reading difficulties, dyslexia, or writing challenges, enabling them to engage with written content effectively.
6. **Mathematics Support:** Mathematical concepts can be challenging for some students. AT tools offer alternatives such as talking calculators, equation editors, and graphing software to help students grasp mathematical concepts.
7. **Organization and Note-Taking:** Students can use AT to stay organized, manage assignments, and take notes in various formats, such as audio recordings or digital annotations.
8. **Engagement:** AT makes learning more engaging and interactive, capturing students' interest and motivating them to participate actively in lessons and activities.
9. **Reduced Frustration:** Students with learning difficulties often experience frustration when tasks are difficult to complete. AT reduces this frustration by providing tools that accommodate their needs and make tasks more manageable.
10. **Inclusive Classroom:** Assistive technology promotes an inclusive classroom environment where students with diverse learning needs can participate fully, collaborate with peers, and contribute to discussions.
11. **Skill Development:** AT tools help develop essential skills, such as reading, writing, communication, and critical thinking, ensuring that students can acquire competencies necessary for academic success.
12. **Transition to Higher Education and Employment:** Familiarity with assistive technology prepares students for higher education and future careers, as many workplaces also use similar tools to accommodate employees with disabilities.

13. **Emotional Well-being:** The positive impact of AT on students' academic achievements and independence contributes to improved self-esteem, reduced stress, and enhanced emotional well-being.
14. **Teacher-Student Collaboration:** Assistive technology encourages collaboration between teachers and students, enabling educators to better understand students' needs and customize their teaching approaches.
15. **Long-Term Benefits:** As students develop proficiency with assistive technology, they acquire valuable digital literacy skills that are essential in today's technology-driven world.
16. **Equal Opportunities:** AT ensures that students with diverse learning needs have the same opportunities as their peers to excel academically and pursue their interests and goals.

Examples of AT Implementation

Scenario: Accessible Online Research Workshop for Adults with Visual Impairments

Objective: To guide participants with visual impairments on effectively conducting online research using screen readers, ensuring they can access, evaluate, and utilize digital information.

Steps:

1. **Topic Selection:**
 - Ask participants to choose a topic of interest for their research. This could be related to a personal hobby, current events, or a specific area of knowledge.
2. **Accessing Online Resources:**
 - Instruct participants to launch their preferred web browser and navigate to a search engine using their screen readers.
 - Encourage them to use advanced search techniques, such as keywords, phrases, and filters, to refine search results.
3. **Navigating Search Results:**
 - Guide participants on navigating through search results using headings and links provided by the screen reader.

- Emphasize the importance of reading brief descriptions and evaluating the relevance of search results.

4. **Website Evaluation:**

- Encourage participants to assess the credibility of websites by listening to page titles, reading introductory paragraphs, and identifying authorship and publication dates.

5. **Gathering Information:**

- Instruct participants to extract relevant information from websites by reading headings, lists, and key content using the screen reader's navigation commands.

6. **Note-Taking:**

- Demonstrate how participants can use screen readers to capture notes in accessible formats, such as text files or voice recordings.
- Encourage them to summarize key points and cite sources for future reference.

7. **Utilizing Digital Resources:**

- Discuss how participants can use screen readers to access various digital resources, including PDF documents, online articles, videos with captions, and podcasts.

8. **Group Sharing:**

- Allow participants to share their research findings and insights with the group. This encourages peer learning and provides an opportunity for discussing diverse perspectives.

9. **Discussing Challenges and Solutions:**

- Initiate a discussion about any challenges participants encountered while conducting research using screen readers.
- Collaboratively brainstorm solutions and strategies to overcome these challenges.

10. **Feedback and Reflection:**

- Facilitate a feedback session where participants can share their thoughts on the workshop's effectiveness and the strategies they found most useful.

- Encourage participants to reflect on how they can apply their newfound research skills in different contexts.

11. **Further Exploration:**

- Provide resources for participants to explore additional tools and techniques for effective online research using screen readers.
- Encourage them to continue practicing and refining their skills independently.

Scenario: Massage Techniques Workshop for Adults with Low Vision

Objective: To provide participants with low vision the opportunity to enhance their understanding of massage techniques using screen magnification software, allowing them to engage in practical demonstrations and discussions effectively.

Steps:

1. **Introduction to the Workshop:**

- Begin by introducing the workshop's objectives and emphasizing the importance of learning massage techniques for relaxation and well-being.

2. **Preparation and Setup:**

- Ensure that participants have their screen magnification software set up and configured according to their preferences.
- Share any relevant course materials, such as handouts or presentations, digitally accessible for use with the screen magnifier.

3. **Massage Technique Demonstrations:**

- Utilize video demonstrations or high-resolution images of massage techniques projected on a screen.
- Instruct participants to use their screen magnification software to closely observe the details of hand movements, pressure points, and body positioning.

4. **Interactive Discussions:**

- After each demonstration, encourage participants to engage in discussions about what they observed and how they would apply the techniques in a massage session.



- Use the screen magnification software to highlight specific points of interest during discussions.

5. Practical Application:

- Divide participants into pairs or small groups for hands-on practice of massage techniques.
- Provide tactile aids or textured props to enhance the sensory experience during practice.

6. Guided Practice with Magnification:

- Assign participants specific massage techniques to practice with a partner.
- Suggest that participants use their screen magnification software to review instructional materials and reinforce their understanding of the techniques.

7. Sharing Experiences:

- After the practical sessions, facilitate a group discussion where participants can share their experiences, challenges, and successes with practicing the techniques.

8. Q&A Session:

- Open the floor for participants to ask questions about massage techniques, ensuring that everyone has a clear understanding.

9. Safety and Ethics Discussion:

- Discuss the importance of safety, consent, and ethical considerations in massage therapy, using accessible resources for participants to review with their screen magnifiers.

10. Resource Sharing:

- Share digital resources, articles, and videos related to massage therapy that participants can explore independently with their screen magnification software.

11. Feedback and Reflection:

- Conclude the workshop by inviting participants to share their thoughts and reflections on how screen magnification software enhanced their learning experience.

Scenario: Literature Appreciation Workshop for Adults

Objective: To engage adults in literature appreciation by using audio books and e-texts, allowing participants to explore and discuss literary works.

Steps:

1. Selection of Literary Works:

- Choose a diverse range of literary works, including short stories, poems, essays, and excerpts from novels.
- Ensure that both audio book versions and e-texts of the selected works are available.

2. Preparation:

- Provide participants with access to the selected audio books and e-texts in advance. Share the resources through digital platforms or distribute them on accessible devices.

3. Introduction to the Workshop:

- Begin by introducing the workshop's objectives, highlighting the benefits of using audio books and e-texts for literature appreciation.

4. Audio Book Listening Sessions:

- Organize audio book listening sessions, where participants listen to selected literary works being narrated by skilled readers.
- Encourage participants to focus on the narrator's tone, expression, and pacing, which can enhance their understanding and emotional connection to the text.

5. Group Discussions:

- Facilitate discussions after each audio book session, allowing participants to share their interpretations, reactions, and thoughts on the literary work.
- Use guided questions to spark discussions and encourage critical thinking.

6. E-Text Exploration:

- Allocate time for participants to explore the e-text versions of the same literary works. Provide guidance on using screen readers or other accessibility tools to access and navigate the e-texts.

7. Independent Reading and Annotation:

- Invite participants to independently read and annotate sections of the e-texts that resonate with them. Encourage them to highlight meaningful passages, jot down questions, and make connections.

8. Small Group Analysis:

- Divide participants into small groups and assign each group a specific literary work.
- Instruct groups to analyze their assigned text, focusing on themes, symbolism, characters, and literary techniques.

9. Presentations and Insights:

- Have each group present their analysis to the larger group. This encourages participants to engage in collaborative learning and benefit from diverse perspectives.

10. Comparative Discussions:

- Facilitate discussions that compare participants' experiences with audio book listening and e-text reading. Explore how each format influenced their comprehension and appreciation.

11. Reflective Writing:

- Invite participants to write reflective pieces on their experience with audio books and e-texts, discussing how these formats enhanced their connection to literature.

12. Resource Sharing:

- Provide participants with a list of websites, apps, and platforms where they can access more audio books and e-texts for personal exploration.

13. Feedback and Conclusion:

- Conclude the workshop by gathering participants' feedback on the use of audio books and e-texts for literature appreciation. Emphasize the value of incorporating multiple formats for learning.