

IEDA

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

2020-1-HR01-KA204-077868

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# **Module 5: Universal Design - the principles and implementation in educational context**

Curriculum on Education on implementation of assistive  
technologies in adult education



# Module 5: Universal Design - the principles and implementation in educational context

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Universal Design (UD) is an inclusive approach aimed at creating environments, products, and educational systems that are accessible to all individuals, regardless of their abilities or disabilities. The principles of Universal Design emphasize flexibility, simplicity, and intuitive use to eliminate barriers and ensure equitable learning experiences for everyone. In an educational context, Universal Design for Learning (UDL) applies these principles to support diverse learners by providing multiple means of representation, engagement, and expression, fostering an inclusive learning environment that nurtures the success and engagement of all students.

## The Theory of Universal Design for Learning

### Participants

Think about inclusive training and visualise what it looks like. How does this vision include learners with disabilities?

Share your own experiences focusing on aspects of training that you found challenging for learners with disabilities. Share with the group how you felt and what your general impressions are about real or imagined inclusive training experiences.

### UNIVERSAL DESIGN (UD)

Universal Design (UD) is the design of products, services, technology, instruction, environments, etc. to make them usable to the greatest extent possible by all people regardless of their age, size, ability or disability.

UD serves the broadest range of users possible, rather than trying to address individual accessibility or inclusion objectives. Typically, it doesn't provide additional support for special cases, instead, providing a single solution that serves the most extensive possible user base, without added adaptation or specialized design.

A universally designed product, technology, environment, etc. is accessible, usable, and inclusive.

## EXAMPLE OF UD

An example of UD is a door lever handle. As opposite to a door knob, this requires a smaller grip strength to operate and could be even operated by a closed fist or an elbow. This is essential for people with hand disabilities, but it also benefits elderly people, children, people with hand injuries or anyone carrying something in the hands.

## UD & UNIVERSAL DESIGN FOR LEARNING (UDL)

UD principles can be applied to learning environments, resources, and methods of instruction.

UDL is the design of learning environments to ensure they are educationally accessible regardless of learning style, physical or sensory abilities.

## UDL

UDL is a curriculum design, development, and delivery approach used to create inclusive, equitable and accessible learning environments.

UDL aims at removing barriers to learning through the use of a variety of teaching methods and strategies. It serves all learners, regardless of ability, disability, age, gender, or cultural and linguistic background.

## UDL (CONT'D)

UDL provides a set of principles for curriculum development that can create the conditions needed for every learner to achieve success.

The UDL framework was created by CAST ([www.cast.org](http://www.cast.org))

## WHY USE UDL?

UDL can provide benefits to ALL learners, not just those with special needs.

The goal of UDL is to reduce barriers and increase options for all learners by:

- Creating interactive welcoming classrooms
- Using a variety of teaching methods and strategies
- Encouraging communication
- Providing ongoing feedback
- Providing accommodations when necessary

## UDL vs. TRADITIONAL

Traditional curriculum is difficult for some learners to access because they have learning preferences and needs that differ from those of the traditional learner.

UDL is designed to meet the unique needs of all learners through stimulating training that is both flexible and varied.

## UDL CURRICULUM COMPONENTS

There are 4 interrelated components of the UDL curriculum:

- Goals: what learners are expected to learn
- Materials: media and tools used for teaching context
- Methods: manner in which the content is taught
- Assessment: method for measuring learner achievements

## GOALS

Learning objectives directly correlated with essential real knowledge and skills motivate learners for learning progress. The goals should be attainable by different learners in different ways

The trainers should avoid unnecessarily prescription of narrow means of goals achievement. We will understand why from the following exercise where a goal formulated in two different ways is analysed.

## GOALS - EXERCISE

- Traditional Goal: "Read the textbook and write a paragraph about the UDL benefits".
- UDL Goal: "Learn about and present information about the UDL benefits".
- What are the barriers the traditional goal might pose for learners?
- What are the benefits of the UDL Goal?

## DISCUSSION

By analysing the two goals against the three UDL principle, we will see the barriers that traditional goal might pose for learners and the benefits of formulating an UDL goal.

### Representation

By asking learners to read a textbook, we create difficulties for those with certain visual impairments or physical disabilities which may have difficulty accessing information from printed text. Also, some students may struggle with decoding the text.

### Action and Expression

By asking learners to write a paragraph, we create unnecessary difficulties for those who may have difficulty with writing

## Engagement

Engagement is not addressed in the traditional goal.

All these learning barriers can be removed through a better formulation, without changing the learning goal (learners to know the UDL benefits). With the UDL goal, the Representation barriers are removed as learners can use alternate methods for accessing the information.

The Action and Expression barrier is removed by giving learners options. They still need to demonstrate that they learned about the UDL benefits but they now have options for doing so.

The Engagement is addressed in the UDL goal as learners will complete the assignment in accordance with their learning need or preference.

Reading the textbook and writing a paragraph are additional tasks layered over mastery of the content knowledge that learners need to attain. Rephrasing this goal can allow flexibility in terms of how learners convey their knowledge and put the focus on learners demonstrating the fullest extent of their understanding, rather than asking them to prove that they can read textbooks and write a paragraph.

## MATERIALS

A variety of training materials should be provided in order to offer learners alternatives to be engaged, learn and demonstrate what they know.

The trainers should use flexible training materials and media in their classroom. Also, alternate materials or media, such as scaled models, tactile materials, etc. should be used whenever is possible.

## METHODS

Trainers should use a variety of training methods that appeal to all learners.

The learning content and information should be presented in multiple ways to help learners master the content.

## ASSESSMENT

Multiple assessment techniques should be considered, in order to enable all learners to choose how to demonstrate their learning.

The ways learners express their understanding should be differentiated according to their individual preferences.

# THE FUNDAMENTAL PRINCIPLES OF UNIVERSAL DESIGN FOR LEARNING

## Participants...

Think about Adult Education:

- what is the value of having a framework such as UDL to guide planning learning activities?
- how can a trainer ensure that all learners have access to the course content?

Share your own experiences and your general impressions about real or imagined adult training experiences.

## PRINCIPLES OF UDL

UDL is based on 3 principles meant to guide educators in reducing or eliminating the learning barriers:

1. Provide multiple means of Engagement
2. Provide multiple means of Representation
3. Provide multiple means of Action and Expression

## THE UDL GUIDELINES

The UDL Guidelines have been developed by CAST and are available on <https://udlguidelines.cast.org>. Each UDL principle is accompanied by 3 guidelines on using resources and tools to improve learning. Each guideline has supporting checkpoints - concrete strategies and suggestions for trainers. UDL has 3 main principles, 9 guidelines and 31 checkpoints.

## THE USE OF UDL GUIDELINES

UDL Guidelines offer a set of concrete suggestions for applying the UDL in practice. They can be mixed and matched according to specific learning goals and can be applied to particular content areas and contexts, in any discipline or domain.

Next, we will discuss the 3 principles, 9 guidelines and 31 checkpoints of UDL.

### 1. ENGAGEMENT - THE "WHY" OF LEARNING

The first principle of UDL, Provide Multiple Means of Engagement, implicates stimulating learners' interest and motivation to learn by offering them a variety of ways to engage with content, their colleagues, and the trainer.

## 1. ENGAGEMENT: GUIDELINES

The Engagement principle includes 3 guidelines that help learners to get access to learning, to build their own expertise, and to internalize their new knowledge and skills:

- 1.1 Provide options for recruiting interest
- 1.2 Provide options for sustaining effort and persistence
- 1.3 Provide options for self-regulation

### 1.1 PROVIDE OPTIONS FOR RECRUITING INTEREST

Checkpoints:

- 1.1.1 Optimize individual choice and autonomy: offer choice for learners in what they learn, how they learn and how express what they know
- 1.1.2 Optimize relevance, value, and authenticity: offer options relevant to the learners (culturally, socially, age and ability appropriate)
- 1.1.3 Minimize threats and distractions: create a safe space for learning with minimal risk of distractions

### 1.2 PROVIDE OPTIONS FOR SUSTAINING EFFORT AND PERSISTENCE

Checkpoints:

- 1.2.1 Heighten salience of goals and objectives: include reminders of both goals and the value of those goals.
- 1.2.2 Vary demands and resources to optimize challenge: provide options for learners to learn content with clear degrees of difficulty
- 1.2.3 Foster collaboration and community: provide opportunities for learners to learn how to work effectively with others
- 1.2.4 Increase mastery-oriented feedback: provide feedback that guides learners toward mastery rather than a fixed notion of performance or compliance

### 1.3 PROVIDE OPTIONS FOR SELF-REGULATION

Checkpoints:

- 1.3.1 Promote expectations and beliefs that optimize motivation: use language and feedback that will allow all trainees to see themselves as capable learners
- 1.3.2 Facilitate personal coping skills and strategies: offer reminders, models, and tools, to assist learners in managing and directing their emotional responses; offer options for stress release
- 1.3.3 Develop self-assessment and reflection: provide learners with tools to reflect on their learning

## 2. REPRESENTATION - THE “WHAT” OF LEARNING

The second principle of UDL, Provide Multiple Means of Representation, focuses on designing or providing training materials in a variety of formats to make them accessible to the greatest number of diverse learners.

### 2. REPRESENTATION: GUIDELINES

The Representation principle comes with 3 guidelines that help learners to know what they are studying, to take in information effectively, and to understand what it means and connect it to their existing knowledge:

- 2.1 Provide options for perception
- 2.2 Provide options for language and symbols
- 2.3 Provide options for comprehension

#### 2.1 PROVIDE OPTIONS FOR PERCEPTION

Checkpoints:

- 2.1.1 Offer ways of customizing the display of information: create resources and materials that address variability and meet the needs of more learners
- 2.1.2 Offer alternatives for auditory information: provide an embedded option for any information presented aurally (e.g., closed-captions for videos)
- 2.1.3 Offer alternatives for visual information: provide an embedded option for learners so they don't have to rely on visual information (e.g., audio alternatives to visual information)

#### 2.2 PROVIDE OPTIONS FOR LANGUAGE & SYMBOLS

Checkpoints:

- 2.2.1 Clarify vocabulary and symbols: translate/explain idioms, archaic expressions, culturally exclusive phrases, and slang.
- 2.2.2 Clarify unfamiliar syntax and structure
- 2.2.3 Support decoding of text, mathematical notation, and symbols: provide direct instruction, prompts, and scaffolded materials for learners who struggle to comprehend information.
- 2.2.4 Promote understanding across languages
- 2.2.5 Illustrate through multiple media

#### 2.3 PROVIDE OPTIONS FOR COMPREHENSION

Checkpoints:

- 2.3.1 Activate or supply background knowledge



2.3.2 Highlight patterns, critical features, big ideas, and relationships: provide explicit cues or prompts to help learners recognize the most important features in information

2.3.3 Guide information processing and visualization: provide all learners with materials, strategies, and tools to support processing and visualization

2.3.4 Maximize transfer and generalization: model explicit strategies learners can use to transfer the information they have to other content areas and situations

### 3. ACTION & EXPRESSION - THE "HOW" OF LEARNING

The third principle of UDL, Provide Multiple Means of Action & Expression, focuses on offering learners' diverse ways to express their understanding and skill development as a result of course experiences.

### 3. ACTION & EXPRESSION: GUIDELINES

The Action & Expression principle comes with 3 guidelines that help learners to know what they are studying, to take in information effectively, and to understand what it means and connect it to their existing knowledge:

- 3.1 Provide options for physical action
- 3.2 Provide options for expression and communication
- 3.3 Provide options for executive functioning

#### 3.1 PROVIDE OPTIONS FOR PHYSICAL ACTION

Checkpoints:

- 3.1.1 Vary the methods for response and navigation: provide multiple options for the methods used for response and navigation within the same assignment
- 3.1.2 Optimize access to tools and assistive technologies: provide multiple options for learners to use assistive technology.

#### 3.2 PROVIDE OPTIONS FOR EXPRESSION & COMMUNICATION

Checkpoints:

- 3.2.1 Use multiple media for communication: provide multiple ways to answer on assessments so learners can express their understanding without barriers.
- 3.2.2 Use multiple tools for construction and composition: provide the choice of several tools or strategies to help learners express their knowledge

- 3.2.3 Build fluencies with graduated levels of support for practice and performance: implement a scaffolding model from teacher-directed to collaborative groups to independent work, slowly releasing responsibility to learners

### 3.3 PROVIDE OPTIONS FOR EXECUTIVE FUNCTIONS

Checkpoints:

- 3.3.1 Guide appropriate goal-setting: provide clear goals to learners on what they must do to meet or exceed expectations
- 3.3.2 Support planning and strategy development: facilitate the process of strategic planning
- 3.3.3 Facilitate managing information and resources: provide scaffolds and supports to act as organizational aids for learners
- 3.3.4 Enhance capacity for monitoring progress: provide formative feedback tools to learners so they can monitor their own progress

### REFLECTION

Take a moment to think and express your ideas around the following questions as they relate to your own teaching:

- What are the elements of your course(s) that could be improved using UDL Guidelines?
- How do you think you can use the UDL Guidelines in your training activity?

# UDL STRATEGIES AND TECHNIQUES

## Participants...

Think about your training activities.

- what technologies could you use to increase the accessibility of your training materials?
- how can you improve your training activities using technology?

Share your own experiences and your general impressions about real or imagined adult training experiences.

## UDL STRATEGIES

UDL strategies are training methods and tools used by trainers to reduce learning barriers and ensure that ALL learners have an equal opportunity to learn. They are aligned with the UDL Guidelines.

The following slides present some examples of strategies aligned with the 3 UDL principles.

## ENGAGEMENT

Strategy	Rationale
Use of multimedia	<ul style="list-style-type: none"><li>• Engages various modes of learning styles.</li><li>• Offers options for reading, watching, listening, designing, and visualizing</li></ul>
Movement activities	<ul style="list-style-type: none"><li>• Some learners have short span of attention and tend to sleep when they don't move</li><li>• Increase vitality and alertness.</li></ul>
Flexible assessment	<ul style="list-style-type: none"><li>• Formative assessment can keep learners engaged</li></ul>
Support risk-taking	<ul style="list-style-type: none"><li>• When learners adventure into risks, they engage their diverse abilities</li></ul>

## REPRESENTATION

Strategy	Rationale
Reading texts aloud / highlight it	<ul style="list-style-type: none"> <li>Helps poor readers and learners with speech therapy to develop</li> <li>Helps learners with low vision and people with limited language proficiency</li> </ul>
Reduce content in a page	<ul style="list-style-type: none"> <li>Helps learners to focus and acquire attention</li> <li>Learners with ADHD, bipolar, anxiety can benefit from it</li> </ul>
Supporting vocabulary with pictures	<ul style="list-style-type: none"> <li>Helps learners with cognitive disabilities, language disabilities and limited language proficiency</li> </ul>
Closed Captioned videos	<ul style="list-style-type: none"> <li>Supports learners with hearing disability</li> <li>Supports bipolar learners to reduce distractions</li> </ul>

## ACTION & EXPRESSION

Strategy	Rationale
Use of Multimedia	<ul style="list-style-type: none"> <li>Increases attention span</li> <li>Helps 3D visualization</li> <li>Can trigger various sensory learning abilities</li> </ul>
Give opportunities to move	<ul style="list-style-type: none"> <li>Helps learners with bipolar or other mental disorders to calm down</li> <li>Helps to get back attention</li> </ul>
Use clip art/graphics /photos as alternative to drawing	<ul style="list-style-type: none"> <li>Supports learners with fine motor deficits</li> </ul>
Text to speech while typing	<ul style="list-style-type: none"> <li>Helps visually impaired learners</li> <li>Helps basic level readers.</li> </ul>

## UDL TECHNIQUES

There are many different techniques to implement UDL and they should be considered for all curriculum components.

Most trainers do already use UDL techniques in their activities. The following slides present some examples of techniques that can be used to implement UDL.

### UDL TECHNIQUES: ENGAGEMENT

The learners' interest and motivation to learn can be stimulated using different techniques, such as:

- Group discussions
- Use of different teaching methods
- Presentations
- Role playing
- Online discussion boards and study chat rooms
- Concept maps

### UDL TECHNIQUES: REPRESENTATION

Using different techniques will give all students the same opportunity to learn.

Examples of relevant UDL techniques:

- Use of different activities: tactile, kinaesthetic, auditory and visual
- Use of different learning materials: online resources, videos, podcasts, presentations, realia, manipulatives, e-books, etc.
- Animations, diagrams, interactive Digital Learning Objects

### UDL TECHNIQUES: ACTION & EXPRESSION

Using different techniques will give all learners the same opportunity to demonstrate their learning.

Examples of relevant UDL techniques:

- choice of assignment content/format
- creating videos
- blogs, journals, presentations
- multimedia projects
- online exercises

## REFLECTION

Think and express your ideas.

- Have you already used UDL strategies or techniques in your training?
- What UDL strategies or techniques might you apply in the future?

# UDL IMPLEMENTATION IN ADULT EDUCATION

## Participants...

Think about Adult Education:

- How can you apply the UDL principles to your training materials?
- How can you improve your training methods using UDL?

Share your own experiences and your general impressions about real or imagined adult training experiences.

## ADULT EDUCATION (AE)

Learners come to Adult Education with different levels of preparation, abilities and skills, and many different life circumstances: their ages, national origins, career goals, gender identities, first languages, home situations, and many more. This presents diverse learning needs that often cannot be addressed by a one-size-fits-all curriculum.

UDL offers AE trainers an approach that adapts to learner variability, without changing what they teach.

## UDL & ADULT EDUCATION

Adult learners can benefit from 2 major aspects of UDL:

- its emphasis on flexible curriculum
- the variety of training methods, materials, and learning activities

UDL supports development of adaptive, flexible, and variable AE curricula. It also provides ways to introduce informal aspects into AE.

## UDL CURRICULUM

There are 4 interrelated components of UDL curriculum:

- **Goals** - the knowledge, concepts, and skills learners need to master
- **Methods** - training strategies used by educators to support learning
- **Materials** - the media used to present content and demonstrate learning
- **Assessment** - the process of gathering information about a learner's progress

## UDL IMPLEMENTATION GUIDELINES

The **UDL principles** and **guidelines** provide AE trainers a framework for **minimizing barriers to learning** in all 4 curriculum components.

Next, we will discuss some implementation guidelines relevant for Adult Education trainers, for each UDL principle.

### ENGAGEMENT

The goal is to give learners a reason to want to continue learning, connecting their previous experiences in a meaningful way to the new ideas that the trainers offer.

Learners should have choices about how they can get started, stay focused, and sustain their effort and attention.

### RECRUITING INTEREST

Good practices:

- Set clear learning goals
- Listen your learners
- Explain the connections between learning outcomes and learners
- Create a safe learning environment
- Use repeating routines

### SUSTAINING EFFORT AND PERSISTENCE

Good practices:

- Check often with your learners for understanding and progress
- Show learners how to collaborate
- Encourage learners to set up and run groups
- Give formative feedback frequently

### SELF-REGULATION

Good practices:

- Use your own experience to show learners how everyone starts from a beginner position; treat failures as opportunities for growth.
- Give learners coping examples
- Divide your lectures into small pieces

### REPRESENTATION

The goal is to give learners the best chance of being prepared and understanding the subjects taught.



Trainers should give learners alternative formats for information and content, to lower learning barriers and increase the accessibility.

## PERCEPTION

Good practices:

- Provide alternatives for visuals and audio
- Offer ways to customize the display of information

## LANGUAGE AND SYMBOLS

Good practices:

- Clarify syntax and structure
- Clarify vocabulary and symbols to be used
- Check with your learners for their understanding on a regular basis
- Use technologies that create alternatives for language and symbols

## COMPREHENSION

Good practices:

- Activate or supply background knowledge
- Highlight patterns, critical information, big ideas, and relationships
- Guide information processing and visualization

## ACTION & EXPRESSION

The goal is to empower learners so they can choose how to demonstrate their learning.

Trainers should give learners options to demonstrate the knowledge and skills acquired.

## PHYSICAL ACTION

Good practices:

- Add options that allow for different physical responses
- Allow flexibility in the pace for learning
- Support learners to use no-tech, low-tech, and high-tech options
- Check for learner understanding regularly
- Make sure you test only the learners' skills that you wish to test

## EXPRESSION AND COMMUNICATION

Good practices:

- Provide alternatives to pen, paper, and talking
- Allow and support learners to use tech-help when expressing themselves
- Create multiple paths for learners to show their skills

## EXECUTIVE FUNCTIONING

Executive functioning = cognitive skills that help us plan, prioritize, and execute complex tasks.

Good practices:

- Guide learners to set and express goals
- Support planning and strategy development
- Provide scaffolds for performance
- Show learners how to give and receive feedback
- Give learners guides, and opportunities to perform peer- and self-assessment

## OTHER RECOMMENDATIONS FOR AE TRAINERS

- Know your learners' strengths and weaknesses
- Use digital materials when possible
- Take advantage of software supports
- Learn from others

## REFLECTION

Think and express your ideas.

- What are the elements of your course(s) that could be improved with UDL?
- What barriers do you anticipate with UDL implementation?
- How are you already implementing UDL in your curriculum?