



Universal Design for Learning (UDL) principles and guidelines

by Marta Kowalczyk-Walędziak
Project 617443 CBHE-JP coordinator Prof. Gracienne Lauwers

<http://edulaweu.eu>



Introduction

based on "CAST" Center for Applied
Special Technology



udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Introduction

Representation

Provide options for
Perception ⁽¹⁾

- Offer ways of customizing the display of information (1.1)
- Offer alternatives for auditory information (1.2)
- Offer alternatives for visual information (1.3)

Provide options for
Language & Symbols ⁽²⁾

- Clarify vocabulary and symbols (2.1)
- Clarify syntax and structure (2.2)
- Support decoding of text, mathematical notation, and symbols (2.3)
- Promote understanding across languages (2.4)
- Illustrate through multiple media (2.5)

Provide options for
Comprehension ⁽³⁾

- Activate or supply background knowledge (3.1)
- Highlight patterns, critical features, big ideas, and relationships (3.2)
- Guide information processing and visualization (3.3)
- Maximize transfer and generalization (3.4)

Expert learners who are...
Resourceful & Knowledgeable

based on "CAST" Center for Applied
Special Technology



udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Introduction

Representation

Action/Expression

Provide options for
Perception ⁽¹⁾

- Offer ways of customizing the display of information (1.1)
- Offer alternatives for auditory information (1.2)
- Offer alternatives for visual information (1.3)

Provide options for
Language & Symbols ⁽²⁾

- Clarify vocabulary and symbols (2.1)
- Clarify syntax and structure (2.2)
- Support decoding of text, mathematical notation, and symbols (2.3)
- Promote understanding across languages (2.4)
- Illustrate through multiple media (2.5)

Provide options for
Comprehension ⁽³⁾

- Activate or supply background knowledge (3.1)
- Highlight patterns, critical features, big ideas, and relationships (3.2)
- Guide information processing and visualization (3.3)
- Maximize transfer and generalization (3.4)

Expert learners who are...
Resourceful & Knowledgeable

based on "CAST" Center for Applied
Special Technology



Provide options for
Physical Action ⁽⁴⁾

- Vary the methods for response and navigation (4.1)
- Optimize access to tools and assistive technologies (4.2)

Provide options for
Expression & Communication ⁽⁵⁾

- Use multiple media for communication (5.1)
- Use multiple tools for construction and composition (5.2)
- Build fluencies with graduated levels of support for practice and performance (5.3)

Provide options for
Executive Functions ⁽⁶⁾

- Guide appropriate goal setting (6.1)
- Support planning and strategy development (6.2)
- Facilitate managing information and resources (6.3)
- Enhance capacity for monitoring progress (6.4)

Expert learners who are...
Strategic & Goal-Directed

udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Introduction

based on "CAST" Center for Applied Special Technology

Representation

Provide options for **Perception** ■

- Offer ways of customizing the display of information 1.1
- Offer alternatives for auditory information 1.2
- Offer alternatives for visual information 1.3

Provide options for **Language & Symbols** ■

- Clarify vocabulary and symbols 2.1
- Clarify syntax and structure 2.2
- Support decoding of text, mathematical notation, and symbols 2.3
- Promote understanding across languages 2.4
- Illustrate through multiple media 2.5

Provide options for **Comprehension** ■

- Activate or supply background knowledge 3.1
- Highlight patterns, critical features, big ideas, and relationships 3.2
- Guide information processing and visualization 3.3
- Maximize transfer and generalization 3.4

Expert learners who are...

Resourceful & Knowledgeable

Action/Expression

Provide options for **Physical Action** ■

- Vary the methods for response and navigation 4.1
- Optimize access to tools and assistive technologies 4.2

Provide options for **Expression & Communication** ■

- Use multiple media for communication 5.1
- Use multiple tools for construction and composition 5.2
- Build fluencies with graduated levels of support for practice and performance 5.3

Provide options for **Executive Functions** ■

- Guide appropriate goal setting 6.1
- Support planning and strategy development 6.2
- Facilitate managing information and resources 6.3
- Enhance capacity for monitoring progress 6.4

Expert learners who are...

Strategic & Goal-Directed

Engagement

Provide options for **Recruiting Interest** ■

- Optimize individual choice and autonomy 7.1
- Optimize relevance, value, and authenticity 7.2
- Minimize threats and distractions 7.3

Provide options for **Sustaining Effort & Persistence** ■

- Heighten salience of goals and objectives 8.1
- Vary demands and resources to optimize challenge 8.2
- Foster collaboration and community 8.3
- Increase mastery-oriented feedback 8.4

Provide options for **Self Regulation** ■

- Promote expectations and beliefs that optimize motivation 9.1
- Support planning and strategy development 9.2
- Facilitate personal coping skills and strategies 9.3
- Develop self-assessment and reflection 9.4

Expert learners who are...

Purposeful & Motivated

udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Introduction

based on "CAST" Center for Applied Special Technology

Representation

Action/Expression

Engagement

udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

What is UDL? It is an educational framework:

- a set of tangible principles helping educators to design and deliver **flexible** approaches to teaching and learning processes (i.e., lesson goals, curriculum resources, instructional practices, and assessments) addressing the needs of **all students** within **diverse classrooms**

What is UDL? It is an educational framework:

- a set of tangible principles helping educators to design and deliver **flexible** approaches to teaching and learning processes (i.e., lesson goals, curriculum resources, instructional practices, and assessments) addressing the needs of **all students** within **diverse classrooms**
- developed by *The Center for Applied Special Technology* (CAST) in 2008

What is UDL? It is an educational framework:

- a set of tangible principles helping educators to design and deliver **flexible** approaches to teaching and learning processes (i.e., lesson goals, curriculum resources, instructional practices, and assessments) addressing the needs of **all students** within **diverse classrooms**
- developed by *The Center for Applied Special Technology (CAST)* in 2008
- contests the traditional 'one-size-fits-all' curriculum

What is UDL? It is an educational framework:

- a set of tangible principles helping educators to design and deliver **flexible** approaches to teaching and learning processes (i.e., lesson goals, curriculum resources, instructional practices, and assessments) addressing the needs of **all students** within **diverse classrooms**
- developed by *The Center for Applied Special Technology (CAST)* in 2008
- contests the traditional 'one-size-fits-all' curriculum
- drawing teachers' attention to the fact that

'Students are no longer thought of as disabled or unable to learn, but rather the curriculum is understood to inhibit some students from accessing and learning content' (Meier & Rossi 2020, p. 83)

For whom?

- from students who have disabilities to the non-disabled students who can learn from them
- from mature students to those in their teens
- from those who grew up in villages to those who grew up in busy cities
- from those who have always loved studying to those who are still finding their groove
- from students who are joining us from far off places and those who are lifelong locals

How is the UDL framework organised:

- 3 broad principles, following
- 9 guidelines, and
- 31 checkpoints

i.e., a coherent, meaningful **guidelines** for specific, **research-based practices** that can support diverse learners

Introduction

Representation

Action/Expression

Engagement

Provide options for Perception

- Offer ways of customizing the display of information 0.1)
- Offer alternatives for auditory information 0.2)
- Offer alternatives for visual information 0.3)

Provide options for Language & Symbols

- Clarify vocabulary and symbols 0.1)
- Clarify syntax and structure 0.2)
- Support decoding of text, mathematical notation, and symbols 0.3)
- Promote understanding across languages 0.4)
- Illustrate through multiple media 0.5)

Provide options for Comprehension

- Activate or supply background knowledge 0.1)
- Highlight patterns, critical features, big ideas, and relationships 0.2)
- Guide information processing and visualization 0.3)
- Maximize transfer and generalization 0.4)

Expert learners who are...

Resourceful & Knowledgeable

based on "CAST" Center for Applied Special Technology



udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Principle 1. Teachers should offer multiple ways of representing knowledge

Learners differ in the ways that they perceive and comprehend information. Therefore, teachers should:

1.1 provide options for **perception** via:

- displaying information in a **flexible format**: e.g. use different size size of text or images
- offering **alternatives for auditory information**: e.g. using captions or visual diagrams
- offering **alternatives for visual information**: e.g. using tactile graphics or objects of reference

Provide options for Perception

- Offer ways of customizing the display of information 0.1)
- Offer alternatives for auditory information 0.2)
- Offer alternatives for visual information 0.3)

Provide options for Language & Symbols

- Clarify vocabulary and symbols 0.1)
- Clarify syntax and structure 0.2)
- Support decoding of text, mathematical notation, and symbols 0.3)
- Promote understanding across languages 0.4)
- Illustrate through multiple media 0.5)

Provide options for Comprehension

- Activate or supply background knowledge 0.1)
- Highlight patterns, critical features, big ideas, and relationships 0.2)
- Guide information processing and visualization 0.3)
- Maximize transfer and generalization 0.4)

Expert learners who are...

Resourceful & Knowledgeable

Principle 1. Teachers should offer multiple ways of representing knowledge

Learners differ in the ways that they perceive and comprehend information. Therefore, teachers should:

1.1 provide options for **perception** via:

- displaying information in a **flexible format**: e.g. use different size size of text or images
- offering **alternatives for auditory information**: e.g. using captions or visual diagrams
- offering **alternatives for visual information**: e.g. using tactile graphics or objects of reference

1.2 provide diverse options for understanding **language and symbols** via:

- clarifying vocabulary and symbols: e.g. *provide graphic symbols or hyperlinks to definitions*
- clarifying syntax and structure: e.g. *highlighting structural relations*
- supporting the decoding of text, mathematical notation, and symbols: e.g. *automatic voicing for digital mathematical notations*
- promoting understanding across languages: e.g. *using electronic translation tools*
- illustrating points through multiple media forms: e.g. *make explicit links between textual and visual information*

Provide options for Perception

- Offer ways of customizing the display of information 0.1)
- Offer alternatives for auditory information 0.2)
- Offer alternatives for visual information 0.3)

Provide options for Language & Symbols

- Clarify vocabulary and symbols 0.1)
- Clarify syntax and structure 0.2)
- Support decoding of text, mathematical notation, and symbols 0.3)
- Promote understanding across languages 0.4)
- Illustrate through multiple media 0.5)

Provide options for Comprehension

- Activate or supply background knowledge 0.1)
- Highlight patterns, critical features, big ideas, and relationships 0.2)
- Guide information processing and visualization 0.3)
- Maximize transfer and generalization 0.4)

Expert learners who are...

Resourceful & Knowledgeable

Principle 1. Teachers should offer multiple ways of representing knowledge

Learners differ in the ways that they perceive and comprehend information. Therefore, teachers should:

1.1 provide options for **perception** via:

- displaying information in a **flexible format**: e.g. use different size size of text or images
- offering **alternatives for auditory information**: e.g. using captions or visual diagrams
- offering **alternatives for visual information**: e.g. using tactile graphics or objects of reference

1.2 provide diverse options for understanding **language and symbols** via:

- clarifying vocabulary and symbols: e.g. *provide graphic symbols or hyperlinks to definitions*
- clarifying syntax and structure: e.g. *highlighting structural relations*
- supporting the decoding of text, mathematical notation, and symbols: e.g. *automatic voicing for digital mathematical notations*
- promoting understanding across languages: e.g. *using electronic translation tools*
- illustrating points through multiple media forms: e.g. *make explicit links between textual and visual information*

1.3, provide options for **comprehension** via:

- activating students' background knowledge: e.g. *use concept maps and make explicit cross-curricular connections*
- highlighting patterns and relationships: e.g. *use graphic organisers to emphasize key ideas and relationships*
- guiding information processing and visualisation: e.g. *scaffolding*
- maximising transfer and generalisation: e.g. *mnemonics and visual imagery*

<https://udlguidelines.cast.org/representation/>

Provide options for Perception

- Offer ways of customizing the display of information 0.1)
- Offer alternatives for auditory information 0.2)
- Offer alternatives for visual information 0.3)

Provide options for Language & Symbols

- Clarify vocabulary and symbols 0.1)
- Clarify syntax and structure 0.2)
- Support decoding of text, mathematical notation, and symbols 0.3)
- Promote understanding across languages 0.4)
- Illustrate through multiple media 0.5)

Provide options for Comprehension

- Activate or supply background knowledge 0.1)
- Highlight patterns, critical features, big ideas, and relationships 0.2)
- Guide information processing and visualization 0.3)
- Maximize transfer and generalization 0.4)

Expert learners who are...

Resourceful & Knowledgeable

Introduction

Representation

Action/Expression

Engagement

Provide options for Physical Action

- Vary the methods for response and navigation (A.1)
- Optimize access to tools and assistive technologies (A.2)

Provide options for Expression & Communication

- Use multiple media for communication (B.1)
- Use multiple tools for construction and composition (B.2)
- Build fluencies with graduated levels of support for practice and performance (B.3)

Provide options for Executive Functions

- Guide appropriate goal setting (E.1)
- Support planning and strategy development (E.2)
- Facilitate managing information and resources (E.3)
- Enhance capacity for monitoring progress (E.4)

Expert learners who are...

Strategic & Goal-Directed

based on "CAST" Center for Applied Special Technology



udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Principle 2. Teachers should provide students with multiple means of action and expression

Learners differ in the ways that they navigate learning environments and express what they know. Therefore, teachers should:

2.1. Provide options for physical action via:

- varying options for response and navigation: *e.g. vary the demands on speed and motor activities required for interacting with instructional material*
- optimising access to tools and assistive technologies: *e.g. provide alternative keyboard commands for mouse actions*

Provide options for Physical Action

- Vary the methods for response and navigation (A.1)
- Optimize access to tools and assistive technologies (A.2)

Provide options for Expression & Communication

- Use multiple media for communication (B.1)
- Use multiple tools for construction and composition (B.2)
- Build fluencies with graduated levels of support for practice and performance (B.3)

Provide options for Executive Functions

- Guide appropriate goal setting (E.1)
- Support planning and strategy development (E.2)
- Facilitate managing information and resources (E.3)
- Enhance capacity for monitoring progress (E.4)

Expert learners who are...

Strategic & Goal-Directed

Principle 2. Teachers should provide students with multiple means of action and expression

Learners differ in the ways that they navigate learning environments and express what they know. Therefore, teachers should:

2.1. Provide options for physical action via:

- varying options for response and navigation: *e.g. vary the demands on speed and motor activities required for interacting with instructional material*
- optimising access to tools and assistive technologies: *e.g. provide alternative keyboard commands for mouse actions*

2.2. Provide options for expression and communication via:

- using multiple media for communication: *e.g. text, speech, drawing, illustration, comics, and storyboards*
- using multiple tools for construction and composition: *e.g. provide spell checkers and word prediction software*
- building fluencies with graduated levels of support: *e.g. provide models that demonstrate the same outcomes, but use differing approaches*

Provide options for Physical Action

- Vary the methods for response and navigation (A.1)
- Optimize access to tools and assistive technologies (A.2)

Provide options for Expression & Communication

- Use multiple media for communication (B.1)
- Use multiple tools for construction and composition (B.2)
- Build fluencies with graduated levels of support for practice and performance (B.3)

Provide options for Executive Functions

- Guide appropriate goal setting (E.1)
- Support planning and strategy development (E.2)
- Facilitate managing information and resources (E.3)
- Enhance capacity for monitoring progress (E.4)

Expert learners who are...

Strategic & Goal-Directed

Principle 2. Teachers should provide students with multiple means of action and expression

Learners differ in the ways that they navigate learning environments and express what they know. Therefore, teachers should:

2.1. Provide options for physical action via:

- varying options for response and navigation: *e.g. vary the demands on speed and motor activities required for interacting with instructional material*
- optimising access to tools and assistive technologies: *e.g. provide alternative keyboard commands for mouse actions*

2.2. Provide options for expression and communication via:

- using multiple media for communication: *e.g. text, speech, drawing, illustration, comics, and storyboards*
- using multiple tools for construction and composition: *e.g. provide spell checkers and word prediction software*
- building fluencies with graduated levels of support: *e.g. provide models that demonstrate the same outcomes, but use differing approaches*

2.3. Provide options for executive functions via:

- guiding appropriate goal-setting: *e.g. provide prompts and scaffolds to estimate and conserve effort required*
- supporting planning and strategy development: *e.g. embed prompts to "stop and think" before acting*
- facilitating the management of information and resources: *e.g. provide templates for data collection and organising*
- enhancing students' capacity for monitoring progress: *e.g. offer prompts and questions to guide self-monitoring and reflection*

<https://udlguidelines.cast.org/action-expression>

Provide options for Physical Action

- Vary the methods for response and navigation (A.1)
- Optimize access to tools and assistive technologies (A.2)

Provide options for Expression & Communication

- Use multiple media for communication (B.1)
- Use multiple tools for construction and composition (B.2)
- Build fluencies with graduated levels of support for practice and performance (B.3)

Provide options for Executive Functions

- Guide appropriate goal setting (E.1)
- Support planning and strategy development (E.2)
- Facilitate managing information and resources (E.3)
- Enhance capacity for monitoring progress (E.4)

Expert learners who are...

Strategic & Goal-Directed

Introduction

Representation

Action/Expression

Engagement

Provide options for Recruiting Interest

- Optimize individual choice and autonomy (1.1)
- Optimize relevance, value, and authenticity (1.2)
- Minimize threats and distractions (1.3)

Provide options for Sustaining Effort & Persistence

- Heighten salience of goals and objectives (2.1)
- Vary demands and resources to optimize challenge (2.2)
- Foster collaboration and community (2.3)
- Increase mastery-oriented feedback (2.4)

Provide options for Self Regulation

- Promote expectations and beliefs that optimize motivation (3.1)
- Facilitate personal coping skills and strategies (3.2)
- Develop self-assessment and reflection (3.3)

Expert learners who are...

Purposeful & Motivated

based on "CAST" Center for Applied Special Technology



udlguidelines.cast.org @CAI, Inc. 2018 (ASI 2018)

Principle 3. Teachers should provide multiple means of engagement

Learners differ significantly in what attracts their attention and engages their interest. Therefore, teachers should:

3.1. Provide diverse options for recruiting students' interest via:

- optimising individual choice and autonomy: *e.g. allow learners to participate in the design of classroom activities*
- optimising relevance, value, and authenticity: *e.g. vary information sources so they can be personalised to individual learners' lives*
- minimising distractions: *e.g. vary the level of novelty and sensory stimuli, and involve all participants in whole class discussions*

Provide options for Recruiting Interest

- Optimize individual choice and autonomy (1.1)
- Optimize relevance, value, and authenticity (1.2)
- Minimize threats and distractions (1.3)

Provide options for Sustaining Effort & Persistence

- Heighten salience of goals and objectives (2.1)
- Vary demands and resources to optimize challenge (2.2)
- Foster collaboration and community (2.3)
- Increase mastery-oriented feedback (2.4)

Provide options for Self Regulation

- Promote expectations and beliefs that optimize motivation (3.1)
- Facilitate personal coping skills and strategies (3.2)
- Develop self-assessment and reflection (3.3)

Expert learners who are...

Purposeful & Motivated

Principle 3. Teachers should provide multiple means of engagement

Learners differ significantly in what attracts their attention and engages their interest. Therefore, teachers should:

3.1. Provide diverse options for recruiting students' interest via:

- optimising individual choice and autonomy: *e.g. allow learners to participate in the design of classroom activities*
- optimising relevance, value, and authenticity: *e.g. vary information sources so they can be personalised to individual learners' lives*
- minimising distractions: *e.g. vary the level of novelty and sensory stimuli, and involve all participants in whole class discussions*

3.2. Provide options for sustaining students' effort and persistence via:

- highlighting goals and objectives: *e.g. prompt or require learners to explicitly formulate or restate goal*
- varying demands and resources to offer challenges: *e.g. differentiate the degree of difficulty for completing core activities*
- fostering collaboration and community: *e.g. create cooperative learning groups with clear goals, roles, and responsibilities*
- increasing mastery-oriented feedback: *e.g. provide feedback that encourages perseverance and self-awareness*

Provide options for Recruiting Interest

- Optimize individual choice and autonomy (1.1)
- Optimize relevance, value, and authenticity (1.2)
- Minimize threats and distractions (1.3)

Provide options for Sustaining Effort & Persistence

- Heighten salience of goals and objectives (2.1)
- Vary demands and resources to optimize challenge (2.2)
- Foster collaboration and community (2.3)
- Increase mastery-oriented feedback (2.4)

Provide options for Self Regulation

- Promote expectations and beliefs that optimize motivation (3.1)
- Facilitate personal coping skills and strategies (3.2)
- Develop self-assessment and reflection (3.3)

Expert learners who are...

Purposeful & Motivated

Principle 3. Teachers should provide multiple means of engagement

Learners differ significantly in what attracts their attention and engages their interest. Therefore, teachers should:

3.1. Provide diverse options for recruiting students' interest via:

- optimising individual choice and autonomy: *e.g. allow learners to participate in the design of classroom activities*
- optimising relevance, value, and authenticity: *e.g. vary information sources so they can be personalised to individual learners' lives*
- minimising distractions: *e.g. vary the level of novelty and sensory stimuli, and involve all participants in whole class discussions*

3.2. Provide options for sustaining students' effort and persistence via:

- highlighting goals and objectives: *e.g. prompt or require learners to explicitly formulate or restate goal*
- varying demands and resources to offer challenges: *e.g. differentiate the degree of difficulty for completing core activities*
- fostering collaboration and community: *e.g. create cooperative learning groups with clear goals, roles, and responsibilities*
- increasing mastery-oriented feedback: *e.g. provide feedback that encourages perseverance and self-awareness*

3.3. Provide options for self regulation via:

- promoting motivation: *e.g. provide coaches and/or mentors to help with attitude and goal-setting*
- facilitating personal coping skills, mechanisms, and strategies: *e.g. seek external emotional support, and developing internal coping skills*
- developing self-assessment and reflection: *e.g. assist individuals to track their own behaviour in order monitor changes*

<https://udlguidelines.cast.org/engagement>

Provide options for Recruiting Interest

- Optimize individual choice and autonomy (1.1)
- Optimize relevance, value, and authenticity (1.2)
- Minimize threats and distractions (1.3)

Provide options for Sustaining Effort & Persistence

- Heighten salience of goals and objectives (2.1)
- Vary demands and resources to optimize challenge (2.2)
- Foster collaboration and community (2.3)
- Increase mastery-oriented feedback (2.4)

Provide options for Self Regulation

- Promote expectations and beliefs that optimize motivation (3.1)
- Facilitate personal coping skills and strategies (3.2)
- Develop self-assessment and reflection (3.3)

Expert learners who are...

Purposeful & Motivated

References:

CAST. (2018). *Universal Design for Learning Guidelines version 2.2*. Retrieved from <http://udlguidelines.cast.org>

Meier, B. S., & Rossi, K. A. (2020). Removing Instructional Barriers with UDL. *KAPPA DELTA PI RECORD*, 56(2), 82-88

UDL Guidelines

Provide multiple means of
Engagement

Provide multiple means of
Representation

Provide multiple means of
Action & Expression