Meet the demands of the future today with

Universal Design for Learning (UDL)

Kamilla Klonowska, Eric Zhi Chen

Introduction

- *The students' **needs** of support during their study years are changing, which is why the practices as educational developers and teachers are also changing.*

- *How to meet the demands of*
  - *Broad recruitment?*
  - *Diversity & disability?*
  - *Learning process?*
  - *Assessment?*

Background

- In Sweden, the number of all students with disabilities has rapidly increased over the last 10 years from about 10 000 to 32 000 students ([4], p.42).

- *Swedish universities can apply for grants for special pedagogical support for students with disabilities in the study situation.*

- From the annual report 2023 we find that the area od **_neuropsychiatric disabilities_** saw the most significant increase, makes up 38% of the student population who received targeted educational support.

- **_Dyslexia_** and **_specific reading and writing_** difficulties were the largest area, accounting for 40% of the student population who received access to support resources [6].

How to meet the demands?

Universal Design for Learning, UDL - "a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn."

(Meyer et al. [10]).

UDL is based on three core principles and associated guidelines:

1) **engagement** at each level of the course
   – improving student's motivation and engagement,
   – aiming for them to progressively take charge of their own learning motivation.
2) **representation**:
   – offers students the guidelines to acquire knowledge,
   – helping them develop resourcefulness in their learning approach.
3) **action** and **expression:**
   – enables students to choose how to demonstrate their knowledge,
   – fostering strategic and goal-directed learners.

Provide multiple means of
Engagement ➔
Affective Networks
The "WHY" of learning

Provide multiple means of
Representation ➔
Recognition Networks
The "WHAT" of learning

Provide multiple means of
Action & Expression ➔
Strategic Networks
The "HOW" of learning

Access

Provide options for
Recruiting Interest (7) ➔
- Optimize individual choice and autonomy (7.1) ➔
- Optimize relevance, value, and authenticity (7.2) ➔
- Minimize threats and distractions (7.3) ➔

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
Physical Action (4) ➔
- Vary the methods for response and navigation (4.1) ➔
- Optimize access to tools and assistive technologies (4.2) ➔

Build

Provide options for
Sustaining Effort & Persistence (8) ➔
- 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
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
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) ➔

Internalize

Provide options for
Self Regulation (9) ➔
- Promote expectations and beliefs that optimize motivation (9.1) ➔
- Facilitate personal coping skills and strategies (9.2) ➔
- Develop self-assessment and reflection (9.3) ➔

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) ➔

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) ➔

Goal

Expert Learners who are…

| Purposeful & Motivated | Resourceful & Knowledgeable | Strategic & Goal-Directed |

WHY? WHAT? HOW?

Universal Design for Learning Guidelines v.2.2.,
@ CAST 2024.
http://udlguidelines.cast.org/

Examples

Start the use of UDL by planning lessons, daily routines, or activities through _a set of questions_ related to the three UDL principles (CAST, [13]):

1. Engagement: "_How can I engage **all** students in my class?_"

Ex: "State learning goals clearly and in a way that feels relevant to students."

2. Representation: "_How can I present information in ways that reach **all** learners?_"

Ex: "Make it easy for students to adjust font sizes and background colors through technology."

3. Action and **expression**: "_How can I offer purposeful options for students to show what they know?_"

Ex: "Provide calendars and checklists to help students track the subtasks for meeting a learning goal."

Results: University-wide support (in general)

- The university supports students with various services, including
  - the reception,
  - the library,
  - the chaplain,
  - IT support and general services,
  - study administration,
  - **learning workshops** such as language workshop, literature search workshop, mathematics workshop,
  - IT- and media pedagogical help, tutoring in study technology, all providing by the **Library** and **Higher Education Development**,
  - HKR Innovation,
  - International Office,
  - **the coordinator for students with disabilities,**
  - student health services,
  - the student union, and
  - **study and career counseling** [15].

Results: University-wide support (individual)

- Some of the university support for the students:
  - note support;
  - mentor (for help with structure and planning);
  - possibility to record the lectures;
  - talking books and other forms of adapted literature;
  - help with academic writing and with math;
  - individual study plan (when full-time studies do not work);
  - extra tutoring by teachers if necessary (e.g. for writing tasks);
  - possibility to write the exam on a computer;
  - possibility to sit in a small group on the exam;
  - possibility of oral examination or oral completion; [16].

Results: Program-wide support

- UDL workshops for all teachers at the department (2016)

- Adapting curricula to UDL principles

  "If the student has a recommendation from HKR for special educational support due to disability, the examiner, or the examiner appointed, <u>has the right to give an adapted examination</u> or let the student <u>complete the examination</u> in an alternative way."

- Adapting assessments
  - Extended examination time, oral completion, digital exams

- Promoting flexibility and availability of teachers to support students who may lack study experience.

Example 1:
Introduction to Computer Science course (DA100D, 2023)

- Campus course, 1st year students, Broad recruitment.

1. Engagement:

Welcome letter, where all students can introduce themselves.

Discord platform for online meetings with Teaching Assistents (older students).

Teacher, who supports the students.

Group work.

2. Representation: Flipped classroom, Academic skills

All course materials are available to students at the beginning of the course.

Good examples, templates.

3. Action and **expression**:

Discussions over traditional teacher-led presentations and problem-solving activities.

Formative assessment in the middle of the course, quizzes.

Example 2:
Programming in C course (DT555B, 2023)

- An online course at introductory level.
- Most of the participants work or study in full time at the same time.
- **Presentation** forum – to know each other
- **Background** survey – the instructor can give the answer at an appropriate level
- **Discussion forum and messaging**
- Online automatically graded **quizzes** as **formative assessment** for participants to self-check and evaluate their understanding on the corresponding contents.
- **Flexibility, well-structured course contents and quick responses.**
  - important to provide the participants with the possibility to learn at their own pace and time
- Feedback from students: "*there were so many different moments for learning: ppt, videos, books, exercises, labs and quizzes. All were good and complemented each other well*"

Finally:

- By integrating UDL (or other similar) principles into the curriculum and teaching methods, the university can address potential challenges **before** they arise, leading to smoother academic journeys for students with varying needs.

- This approach aligns with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and European regulations that universities must adhere to, including those related to **broaded recruitment**, **inclusion** and **accessibility**.