Agenda

- **Differentiating** the Digital Technologies curriculum

- **Levels A-D** (Pre-foundation)

- **Modifying (adjusting) the Curriculum** for Individual Education Plans

- **Universal Design for Learning** for all students

Digital Learning
and Teaching Victoria

Common Terms

- Disability
  - reduced cognitive capacity, which has a global impact on learning and daily functioning
  - the difficulty continues to exist, despite appropriate instruction and intervention
- Difficulty
  - Specific Learning Difficulty (SLD) - significant difficulty in one academic area while coping well, or even excelling, in other areas
  - e.g. dyslexia

https://dsf.net.au/what-are-learning-disabilities/
http://www.education.act.gov.au/__data/assets/pdf_file/0020/714332/Learning-Difficulties-Factsheet-1.pdf

Common Terms

- Accommodation
  - Called 'adjustments' in the Australian Curriculum
  - Intended to reduce the effects of a disability
- Differentiation
  - An overall approach to planning, teaching, and managing that takes into account individual student needs.
  - Do this for all students – teaching in a way that everyone in your class can learn and show their learning

Hyde, M. B. (2014). Understanding diversity, inclusion and engagement. *Diversity, Inclusion and Engagement*

Ways of thinking about digital solutions

Creating Digital Solutions

analysing

designing
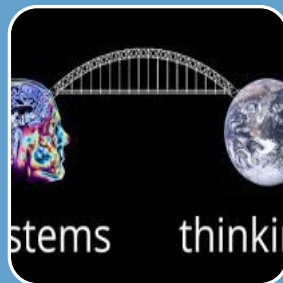
developing

evaluating
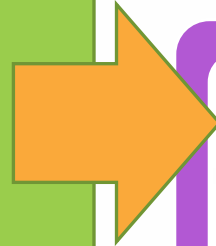
Computational thinking

- Flowcharts
- Algorithms
- Coding

Design thinking

- Brainstorming
- Playtesting
- Inventing new items

Systems thinking

- Look for patterns of behaviour
- Think about interconnections

Working with a group of 2-3 discuss the following questions:

Q1: How do you differentiate your instruction?

Q2: How do you teach:

> Computational Thinking

> Design Thinking

> Systems Thinking

Are any of these easier/harder to differentiate?

Key Concepts

"Underpinning the learning in the Digital Technologies curriculum are the key concepts that establish ways of thinking about solving problems, looking for opportunities for enterprise and looking at the impact of solutions."

- abstraction
- data acquisition, representation and interpretation
- specification, algorithms and implementation
- digital systems
- privacy and security

"Collectively these concepts span the key ideas about the organisation, representation and automation of digital solutions and information. The concepts can be explored in digital or non-digital contexts"

From VCAA planning and reporting guidelines:

"Adjustments are made according to the individual's learning needs by drawing from learning area content at different levels along the Foundation to Level 10 sequence, which for students with disabilities could include the 'Levels A to D' Towards Foundation."

- Levels A to D focuses on progressing students from a pre-intentional to intentional engagement in learning.
- They support students to develop their independence as they explore, participate and engage in the world around them.
- As students progress through these levels, the amount of support decreases as they proceed towards becoming independent learners.

- 'Levels A to D' are not associated with any set age or year level that links chronological age to cognitive progress. Rather the learning descriptions for levels A to D are structured by the continuum on the following slide.

LEVELS A – D (PRE-FOUNDATION)

Level A	Level B	Level C	Level D
Pre-intentional (Reaction)	Cause and effect activities	First signs of independence	Cooperate in a group
Choice making usually from a field of two	Choice making from a field of three	Choice making from four	Express feelings and Recount Experiences
Intrinsic motivation	Matching real objects	Participate with others	Start reflecting on own behaviour
Gaze, touch hit, pat, smile	Matching, scan, manipulate	Use, identify, sequence	Collect, sort, represent

From VCAA planning and reporting guidelines:

"Adjustments are made according to the individual's learning needs by drawing from learning area content at different levels along the Foundation to Level 10 sequence, which for students with disabilities could include the 'Levels A to D' Towards Foundation."

Adjusting the curriculum:

☑ Use the same **context** as their classmates (Strand) but adjust activities to what the student is **ready to learn** (Level).

☑ Where possible, try to align **content** with what other students are doing.

Content descriptions – Levels 9 and 10

Digital Systems and Security

Students learn to:

investigate how hardware and software manage, control and secure access to data in networked digital systems

VC2TDI10S01

ELABORATIONS

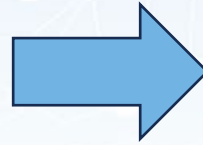develop cyber security threat models, and explore a software, user or software supply chain vulnerability

VC2TDI10S02

ELABORATIONS

investigate how hardware and software manage,
control and secure access to data in networked
digital systems

VC2TDI10S01

ELABORATIONS

Carry out some key functions on digital systems
(hardware and software components) to meet a
purpose (VCDTDS010)

My lesson: Discuss "Why we have passwords", "What is a strong password?" and "Passphrases"
Then students create their own passphrase: (e.g. `I8pizza@home`)

If you cannot use any of the content descriptors, then just use the A-D curriculum

Your mission is to plan an activity for a student who needs the curriculum adjusted to a lower level.

Adjusting the curriculum:
- ☑ Use the same **context** as their classmates (Strand) but adjust activities to what the student is **ready to learn** (Level).
- ☑ Where possible, try to align **content** with what other students are doing.

Digital Technologies: Levels A – D

Level A	Level B	Level C	Level D
Digital Systems			
React to the use of some common digital systems, (hardware and software components), as they experience their purpose	Explore the purpose and use of some common digital systems (hardware and software components)	Initiate some basic functions on common digital systems (hardware and software components) to meet a purpose	Carry out some key functions on digital systems (hardware and software components) to meet a purpose
Data and Information			
React to patterns and different types of data and experience how data is sorted and represented as images using digital systems	Collect and sort familiar data, and with assistance use digital systems to represent the findings as images	Collect, sort and recognise simple patterns in data, and assist with the use of digital systems to represent data as pictures and symbols	Collect, sort, and recognise, with assistance, different types of patterns in data, and use digital systems to represent data as pictures, symbols and diagrams
Creating Digital Solutions			
Experience steps involved in completing a routine task	Follow a sequence of steps and decisions needed to solve simple problems	Follow, and with assistance represent a sequence of steps and decisions (algorithms) needed to solve simple problems	Follow and represent a sequence of steps and decisions (algorithms) needed to solve simple problems
Achievement Standard			
By the end of Level A, students recognise common digital systems that are used to meet specific everyday purposes. Students react to different types of data and how digital systems can be used to represent data as images. Students recognise that routine tasks involve completing a set of steps.	By the end of Level B, students explore some common digital systems for a purpose. Students collect data, sort them based on given characteristics and with assistance use digital systems to display findings as images. Students follow a sequence of steps and decisions needed to solve simple problems.	By the end of Level C, students explore alternative digital systems to meet a purpose. Students collect and sort different data and identify patterns in data through matching. With assistance, they use digital systems to display findings with pictures and symbols. Students represent a sequence of steps that could be followed to solve a simple problem.	By the end of Level D, students use key functions of digital systems and indicate their purpose. Students collect, sort and recognise, with assistance different types of patterns in data. They use digital systems to display results using pictures, symbols and diagrams. Students use a sequence of steps and decision making processes to solve a simple problem.

Universal Design for Learning (UDL)

"The conscious and deliberate planning of units and lessons so that all students have access to, and can participate in, the curricula, and can grow in their achievement of learning outcomes".

(van Kraayenoord, 2007, p. 390)

Universal Design for Learning (UDL)

www.pinterest.com

What kind of Universal Design solutions have you noticed at your placement school? Think beyond buildings to resources available in the classroom.

www.corwinconnect.com

UDL is not…

- **Specialised privileges for a few students**
  - It is not about special accommodations
- **Watering down your academic expectations**
  - It is not about making subjects easier – school is supposed to be challenging if learning occurs
- **A "magic bullet" or "fix" for all students**
  - It is not going to solve all your curricular or pedagogical problems
- **A prescriptive formula**
  - No checklist will offer the "UDL solution"

Think about how learners will engage with the lesson.

Does the lesson provide options that can help all learners:

- regulate their own learning?
- sustain effort and motivation?
- engage and interest all learners?

Think about how information is presented to learners.

Does the information provide options that help all learners:

- reach higher levels of comprehension and understanding?
- understand the symbols and expressions?
- perceive what needs to be learned?

Think about how learners are expected to act strategically & express themselves.

Does the activity provide options that help all learners:

- act strategically?
- express themselves fluently?
- physically respond?

From: *Universal Design for Learning: Theory and Practice*

Design Multiple Means of Engagement →

Design Options for Welcoming Interests & Identities (7) →
- Optimize choice and autonomy (7.1) ›
- Optimize relevance, value, and authenticity (7.2) ›
- Nurture joy and play (7.3) ›
- Address biases, threats, and distractions (7.4) ›

Design Options for Sustaining Effort & Persistence (8) →
- Clarify the meaning and purpose of goals (8.1) ›
- Optimize challenge and support (8.2) ›
- Foster collaboration, interdependence, and collective learning (8.3) ›
- Foster belonging and community (8.4) ›
- Offer action-oriented feedback (8.5) ›

Design Options for Emotional Capacity (9) →
- Recognize expectations, beliefs, and motivations (9.1) ›
- Develop awareness of self and others (9.2) ›
- Promote individual and collective reflection (9.3) ›
- Cultivate empathy and restorative practices (9.4) ›

Design Multiple Means of Representation →

Design Options for Perception (1) →
- Support opportunities to customize the display of information (1.1) ›
- Support multiple ways to perceive information (1.2) ›
- Represent a diversity of perspectives and identities in authentic ways (1.3) ›

Design Options for Language & Symbols (2) →
- Clarify vocabulary, symbols, and language structures (2.1) ›
- Support decoding of text, mathematical notation, and symbols (2.2) ›
- Cultivate understanding and respect across languages and dialects (2.3) ›
- Address biases in the use of language and symbols (2.4) ›
- Illustrate through multiple media (2.5) ›

Design Options for Building Knowledge (3) →
- Connect prior knowledge to new learning (3.1) ›
- Highlight and explore patterns, critical features, big ideas, and relationships (3.2) ›
- Cultivate multiple ways of knowing and making meaning (3.3) ›
- Maximize transfer and generalization (3.4) ›

Design Multiple Means of Action & Expression →

Design Options for Interaction (4) →
- Vary and honor the methods for response, navigation, and movement (4.1) ›
- Optimize access to accessible materials and assistive and accessible technologies and tools (4.2) ›

Design Options for Expression & Communication (5) →
- Use multiple media for communication (5.1) ›
- Use multiple tools for construction, composition, and creativity (5.2) ›
- Build fluencies with graduated support for practice and performance (5.3) ›
- Address biases related to modes of expression and communication (5.4) ›

Design Options for Strategy Development (6) →
- Set meaningful goals (6.1) ›
- Anticipate and plan for challenges (6.2) ›
- Organize information and resources (6.3) ›
- Enhance capacity for monitoring progress (6.4) ›
- Challenge exclusionary practices (6.5) ›

Access

Support

Executive Function

In this typical Year 7 task, students develop their understanding of networks and ways in which data is transmitted and validated.

1. MULTIPLE MEANS OF REPRESENTATION

The 'what' of learning

Provide information in a variety of forms and media.

What is a network? Use the analogy of a transport system to learn about a computer networks.

In both networks there are multiple ways to get from one station to the other. Just as train networks move people, computer networks move data.

2. MULTIPLE MEANS OF EXPRESSION

The 'how' of learning

Offer different ways of demonstrating knowledge.

Use maps and diagrams to represent network connections and routes.

Relate computer networking components to familiar objects.

Sydney Trains Network
NSW Transport

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3. MULTIPLE MEANS OF ENGAGEMENT

The 'why' of learning

Give students choice and an appropriate level of challenge.

Instead of the transportation map, use a simpler and more familiar example, such as a school map. Choose two locations and look for alternative routes to them.

Instead of using a transportation network map to represent a computer network, simplify the task and use a school-based example. Role-play sending a message to the office.

For example, if a student brings a note (data) to the principal, they first look at the school map (DNS) to choose a route to the school office, where the receptionist (router), redirects the student to the principal's office.

The principal responds to the note and sends a new message or document (data) back. This mimics an internet request.

Your Turn:

UDL Planning template

Year level band		Curriculum strand	

Content description		Additional learning area (optional)	

Provide multiple means of **Engagement**	Provide multiple means of **Representation**	Provide multiple means of **Action & Expression**
Access		
Plan of options for <u>welcoming interests & identities</u>	Plan of options for <u>perception</u>:	Plan of options for <u>interaction</u>:

Questions?

Further Resources:

Digital Technologies Curriculum 2.0

https://f10.vcaa.vic.edu.au/learning-areas/technologies/digital-technologies/introduction

Towards Foundation Victorian Curriculum F-10 Guidelines for Students with Disabilities

https://victoriancurriculum.vcaa.vic.edu.au/static/docs/VC%20Towards%20Foundation%20Levels%20A-D%20guidelines%202017.pdf

UDL Guidelines Version 3.0

CAST.org

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