

## Games supporting special needs

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If you have two minutes, please fill out my anonymous teaching vocabulary survey at:  
[www.selage.org](http://www.selage.org)

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- This session will present research findings on the use of Games and ICT to teach vocabulary to students with an intellectual disability.
- Students with additional needs including those having autism, ADHD, down syndrome, and cognitive delays need extra consideration in lesson planning.
- In this session Clark argues that use of digital technologies and games can provide tangible experiences individually tailored to a child's specific needs

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### This session

- Common Terms
- Developmental Disabilities
- My Vocabulary Research
- The Institute of Play
- Curriculum Levels A-D and ABLES
- Adapting the curriculum across levels/bands
- Future of teaching: Robots!

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### 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](http://www.education.act.gov.au/_data/assets/pdf_file/0020/714332/Learning-Difficulties-Factsheet-1.pdf)

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### 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*

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### Common Terms

- Literacy
  - The ability to read, write, speak, and **interact** with others and derive meaning in the **culture**
- Numeracy
  - The **quantitative data** (money, distance, mapping & directions) we encounter on a **daily** basis

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

(Crowe, 2010)

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Kahoot!


- <https://play.kahoot.it/#/?quizId=7dc275d0-fc0a-4fd4-842c-5393676c338f&token=26bdd2e3-85c6-4a02-b8ed-351e2e03473a&user=secondaryburt>

Kahoot.it

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ADHD

- Two basic areas:
  - Inattention
  - Hyperactivity/ Impulsivity
- Clear evidence that symptoms interfere with/ reduce quality of social and/or school interaction/achievement
- Positive Traits:
  - Creativity and intuition
  - Energy
  - Big picture people
  - Fast thinking
  - Problem solvers



(Every Day With ADHD, 2015) & (Shire, 2017)

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But, is it ADHD?

- Trauma can look like
  - Disruptive
  - Inattentive
  - Impulsive
  - Poor social interaction
  - Low academic scores
- However...
  - Treatment is very different for students diagnosed with trauma
  - Usually difficulty forming attachments with others, including the teacher


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Down syndrome

Down Syndrome is a genetic disorder caused when abnormal cell division results in extra genetic material from chromosome 21. This means people with Down Syndrome have 47 chromosomes instead of 46. Extra chromosomes have an effect on how the brain and body develops.

The rate of Australian babies born with Down Syndrome is approximately 1:1,100. (This is lower than the worldwide rate of around 1 in 700 because of high termination rates in Australia)

Physical Development of children with Down Syndrome is often slower than those without.




(Downs Syndrome Australia, 2017), (National Institutes of Health, 2017)

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Autism Spectrum Disorder

Symptoms:

- difficulties in social development
- possible communication delays/inability
- repetitive behaviour
- sensory abnormalities
  - (E.g. enhanced auditory and/or visual sensors)
- deficits in motor coordination
- unusual eating behaviours
- and in extreme cases they can be violent or have violent outbursts when uncomfortable



(American Psychiatric Association, 2013)

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Intellectual disabilities

Significant impairment cognitively (**slow learner** who is academically and socially below same-aged peers) with an *IQ of 70 or under*

Likely difficulties...

- adaptive behaviour
- understanding new information
- with communication and social skills
- sequential processing of information
- comprehending abstract concepts

(American Psychiatric Association, 2013)

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### My Research

- Games can be used as a context to teach skills (e.g. vocabulary, storytelling, spatial awareness, etc)
- Context is important for understanding new concepts – we learn new ideas by connecting them to what we already know (e.g. Piaget’s Assimilation vs Accommodation)
- “Learn by doing”, “Active Learning”, “Experiential Learning”

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### Importance of explicitly teaching Vocabulary

- Students with an ID have know fewer words and thus reading is challenging for them, they read less
- Traditional vocabulary teaching methods may not be effective for ID students, let alone close the gap.
- Teachers need to explicitly teach new vocabulary to ID students as they will less likely learn incidentally.
- Two distinct skills to teach: word knowledge (direct instruction) and the ability to decode word parts (indirect instruction) (Langenberg, 2000)

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### What words to teach?

- Two methods:
  - Word Lists: Fry’s 1,000 Words list (Fry, 1980) or New General Service List (Browne, Culligan & Phillips, 2013)
  - Choose words (2<sup>nd</sup> tier words) from a text you plan to teach with (Beck, McKowen & Kucan, 2003)



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### PILOT STUDY – ASHWOOD SCHOOL



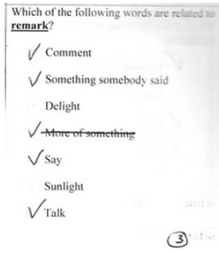
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### Assessment vocabulary knowledge

‘Knowing a word’ Levels:	Beck (2012) Levels:
0 Points – No or minimal understanding or guessing	Unknown
1 Point – Basic understanding of common uses of the word	Acquainted
2 Points – Common associations – likely understood in contexts	
3 Points – Developed understanding of nuances of the word	Established
4 Points – Deep Understanding – likely to apply in multiple contexts	

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‘Knowing a word’ Levels:	Beck et al.(2012) Levels:
3 Points – Developed understanding of nuances of the word	Established



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"Knowing a word" Levels:	Beck (2012) Levels:
0 Points – No or minimal understanding or guessing	Unknown




Which of the following words are related to **remark**?

- Comment
- Something somebody said
- Delight
- More of something..
- Say
- Sunlight
- Talk

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### Results

- Both Non-ICT and ICT groups had a 20% increase in knowledge of 24 target words
- Biggest increases came in weeks 4 & 3:

Week 4 words: wander, swollen, radiant, remark  
 Week 3 words: eagerly, furiously, dreadfully, thread

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### Discussion

- ICT is just as successful as Paper-Based (no significant difference), despite my impression during the teaching
- Lower ability students likely to struggle with "independent learning" method of ICT-based tasks
- REGARDLESS any explicit teaching of vocabulary is beneficial

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The 'Towards Foundation Level Victorian Curriculum' is integrated directly into the curriculum and is referred to as 'Levels A to D'.

Levels A to D focuses on progressing students from a pre-intentional to intentional engagement in learning.

'Levels A to D' are not associated with any set age or year level that links chronological age to cognitive progress.

<http://victoriancurriculum.vcaa.vic.edu.au/overview/diversity-of-learners>

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Level A	Level B	Level C	Level D
<b>Pre-intentional (Reaction)</b> Students need high levels of <b>coactive support</b> and focused attention from the teacher. Students demonstrate <b>some awareness</b> and recognition of familiar people and <b>routine activities</b> . Choice making usually from a field of two Intrinsic motivation Gaze, touch hit, pat, smile	<b>Cause and effect activities</b> Students become more reliant on <b>verbal prompts</b> and gestures to facilitate their learning. They respond to familiar people and events and begin to use <b>'yes/no' responses</b> . Choice making from a field of three Matching real objects Matching, scan, manipulate	<b>First signs of independence</b> Students respond more consistently to prompts and <b>simple clear directions</b> . They start to use and link some familiar words and images to construct a <b>meaningful communication</b> . Choice making from four Participate with others Use, identify, sequence	<b>Cooperate in a group</b> They <b>express their feelings, needs, and choices</b> in increasingly appropriate ways. They indicate the beginning of understanding <b>social rules and expectations</b> and are beginning to <b>reflect</b> on their own behaviour. Considering outcomes of different choices Resilient in 'losing' in group activities Collect, sort, represent

[https://www.eduweb.vic.gov.au/edulibrary/public/stuman/wellbeing/ABLES/ABLES\\_Introductory\\_Guide.pdf](https://www.eduweb.vic.gov.au/edulibrary/public/stuman/wellbeing/ABLES/ABLES_Introductory_Guide.pdf) and <http://victoriancurriculum.vcaa.vic.edu.au/overview/diversity-of-learners>

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The Abilities Based Learning and Education Support (ABLES) program is a package of assessment tools, curricula, teaching strategies and resources that can help schools to better understand and meet the learning needs of all students, including students with a disability.

**Learning and Teaching Resources**

- Disability-based Learning
- Interdisciplinary Learning
- Physical, Personal and Social Learning
- Learning Diversity Resources
  - Autism Resources
  - English as an Additional Language
  - Gifted and Talented Education
  - Home Learning Resources
  - Learning the law
  - Programs for Students with Disabilities
- Handbook and Guidelines

**ABLES - Abilities Based Learning and Education Support**

Learning and Teaching Resources + Learning Diversity Resources + Students with Disabilities + ABLES - Abilities Based Learning and Education Support

The Abilities Based Learning and Education Support (ABLES) program supports the teaching and learning of students with disabilities and additional needs. It provides a suite of curriculum, pedagogy, assessment and reporting resources that assist teachers in recognizing and responding to the diverse learning needs of all students, and in assessing and reporting student learning, monitoring student progress and providing accurate intervention advice.

**ables**

**Features**

ABLES provides an approach to effectively assess, monitor and respond to a student's abilities by:

- Accurately identifying and setting learning goals for students with disabilities and additional learning needs.
- Tracking a student's progress against their individual learning plan over time, and providing new information to parents on their child's learning and development.

Identifying the optimal resources that are known to improve learning, which can be adjusted as the learning needs of students change over time.

<http://acd.org.au/resources-support/planning-assessment/adjustments-curriculum/>

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### Assessment

**INSTRUCTIONS:** For each question, please choose ONE Y ONE response. The response you choose should be the closest match to this student's typical performance.

**Speaking and Listening: Establishing Meaning Between People**

**Q1. Requesting an object or activity**

- Uses gestures, vocalization, objects, photographs or pictures to request an object/activity (e.g., asks for a drink by pointing to a cup)
- Uses and combines names, words, signs, and/or symbols to make requests and acknowledge receipt of objects
- Adapts requests to suit other people's expectations of politeness, timing and reasonableness
- (Has not yet reached any of these levels)

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### Reporting

The image shows three reporting forms. The 'Learning Readiness Report' includes a table with columns for 'Purpose', 'Skill', and 'Proficiency'. The 'Student Profile Report' has fields for 'Student Name', 'Date of Birth', 'Gender', 'Ethnicity', 'Religion', 'Language', and 'Special Needs'. The 'Class Report' is a table with columns for 'Student ID', 'Name', 'Age', 'Gender', 'Ethnicity', 'Religion', 'Language', and 'Special Needs', with rows for individual students.

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### Relating the Victorian Curriculum to ABLES

You are legally obligated to teach students topics from their **year level**.

But how you teach can be based on their **developmental level**.

Thus, use content from their age level but modify it to use tasks from their academic level

**Levels 9 and 10**

**Levels 9 and 10 Description**  
In Levels 9 and 10, students apply systems thinking skills when considering how human interaction with networked systems introduces complexities surrounding access to, and the security...

**Levels 9 and 10 Content Descriptions**

**Digital Systems**  
Investigate the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems. (VCDTDS045)

**Data and Information**  
Analyse simple compression of data and how content data is separated from presentation. (VCDTDS046)  
Develop techniques for acquiring, storing and validating quantitative and qualitative data from a range of sources, considering privacy and security requirements. (VCDTDS047)  
Analyse and visualise data to create information and address complex problems, and model processes, entities and their relationships using structured data. (VCDTDS048)  
Manage and collaboratively create interactive solutions for sharing ideas and information online, taking into account social contexts and legal responsibilities. (VCDTDS049)

**Creating Digital Solutions**  
Follow and represent a sequence of steps and decisions (algorithms) needed to solve simple problems. (VCDTDS050)

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### Modifying the Curriculum Example:

**Year 9 Students working at ABLES level D**

**Digital Systems**  
Investigate the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems (VCDTDS045)

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The screenshot shows the Victorian Curriculum website interface. It displays two columns: 'Level C (students with disabilities)' and 'Level D (students with disabilities)'. Both columns have sections for 'Level Description', 'Level Content Descriptions', 'Digital Systems', 'Data and Information', and 'Creating Digital Solutions'. The 'Level D' section is highlighted in the image.

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**Year 9 Digital Systems**  
Investigate the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems (VCDTDS045)

**My lesson:** Discuss "Why we have passwords", "What is a strong password?" and "Passphrases"  
Then students create their own passphrase: (e.g. I8p1zza@home)

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**Levels 9 and 10**

**Levels 9 and 10 Description**  
 In Levels 9 and 10, students apply systems thinking skills when considering how human interaction with networked systems introduces complexities surrounding access to, and the security of, data.

**Levels 9 and 10 Content Descriptions**

**Digital Systems**  
 Investigate the role of hardware and software in managing, controlling and securing the movement of and access to data in networked digital systems (VCDDT004)

**Data and Information**  
 Analyse simple compression of data and how content data are separated from presentation (VCDDT004)  
 Develop techniques for acquiring, storing and validating quantitative and qualitative data from a range of sources, considering privacy and security requirements (VCDDT047)  
 Analyse and visualise data to create information and address complex problems, and model processes, entities and their relationships using structured data (VCDDT048)  
 Manage and collaboratively create interactive solutions for sharing data and information online, taking into account social contexts and legal responsibilities (VCDDT049)

**Creating Digital Solutions**

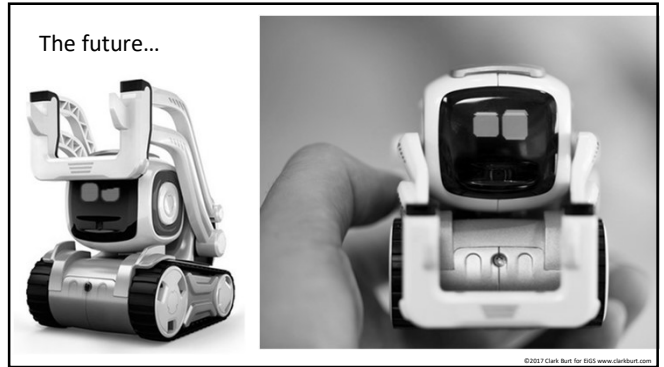
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MODIFYING THE CURRICULUM:

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

**Data and Information**

Collect, sort, and recognise, with assistance, different types of patterns in data, and use digital systems to represent data as pictures, symbols and diagrams (VCDTDI011)



**Thank you & References**

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: American Psychiatric Association.

Crowe, A. R. (2010). "What's Math Got to Do With It?": Numeracy and Social Studies Education. *The Social Studies*, 101(3), 105-110.

Down Syndrome Australia (2017). Research and Statistics. Retrieved 22 October, 2017 from [https://www.downsyndrome.org.au/down\\_syndrome.html](https://www.downsyndrome.org.au/down_syndrome.html)

Every Day With ADHD. (2015). How many kids in Australia have ADHD? Retrieved 22 October, 2017 from <http://www.everydaywithadhd.com.au/FAQRetrieve.aspx?ID=41495>

Hyde, M., Carpenter, L., & Conway, R. (Eds.). (2014). Diversity, inclusion and engagement (2nd ed.). South Melbourne, Victoria: Oxford University Press.

Shire. (2017). Diagnosis of ADHD using DSM-5TM. Retrieved 22 October, 2017 from <http://adhd-institute.com/assessment-diagnosis/diagnosis/dsm-5/>