



Universal Design of Learning (UDL)

and

Use of Technology

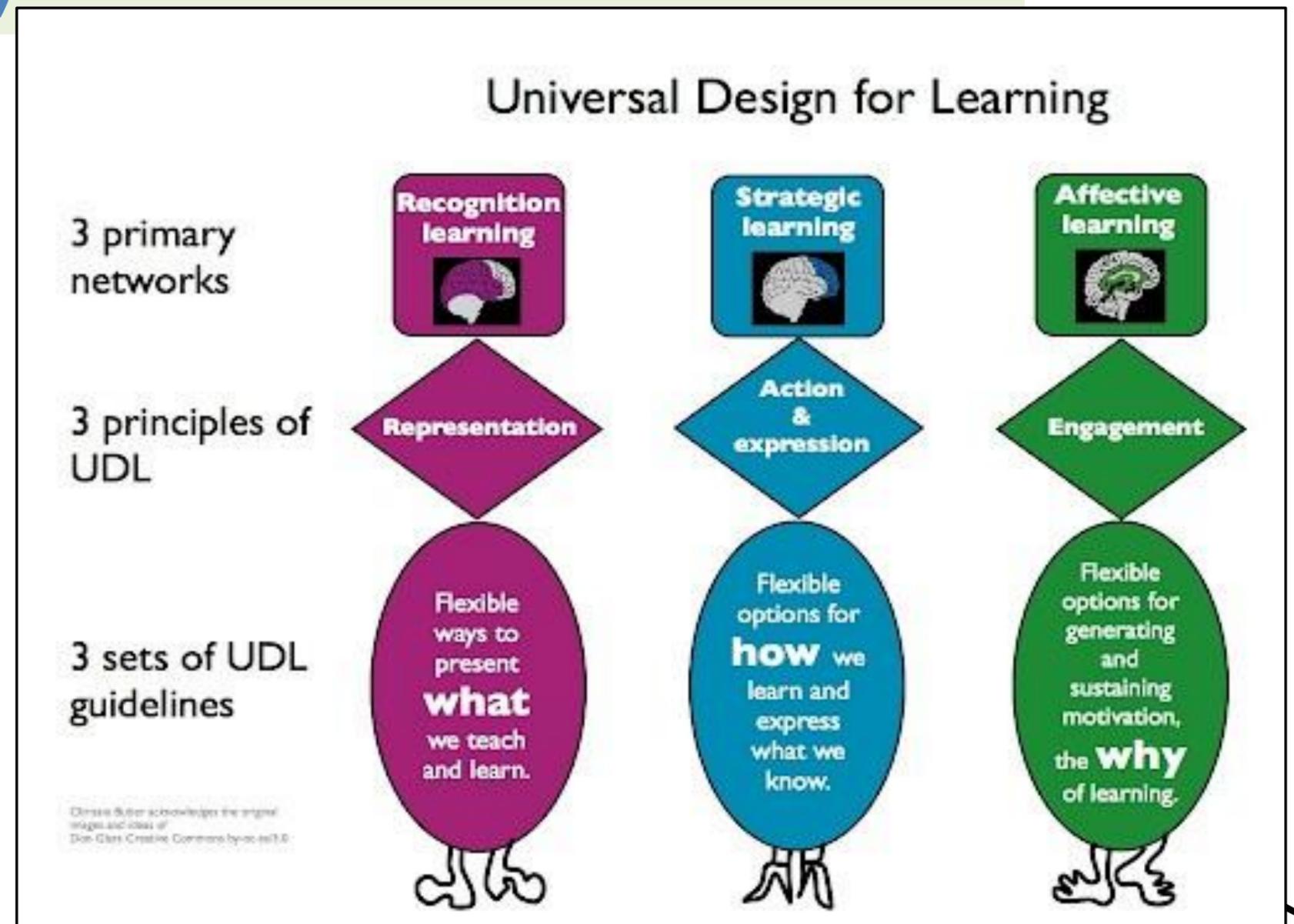


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Universal Design of Learning (UDL)

a teaching approach that works to accommodate the needs and abilities of all learners and eliminates unnecessary hurdles in the learning process.



WHY UNIVERSAL DESIGN FOR LEARNING?

Classrooms are filled with students who:

have different needs

come from different educational backgrounds

have different attention spans and interests

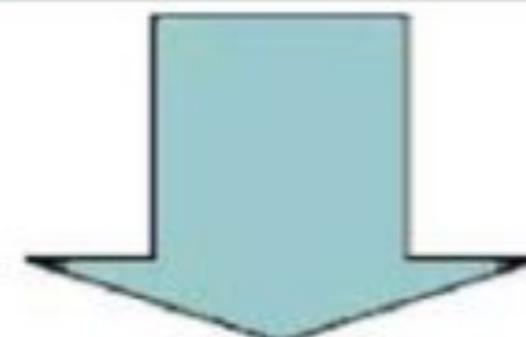
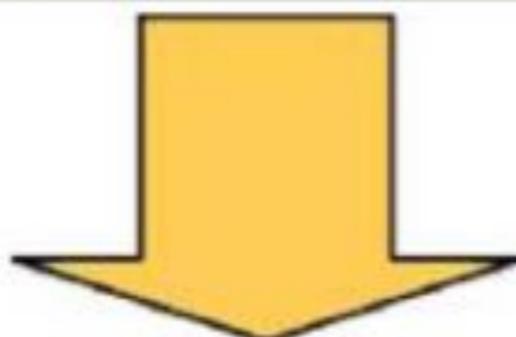
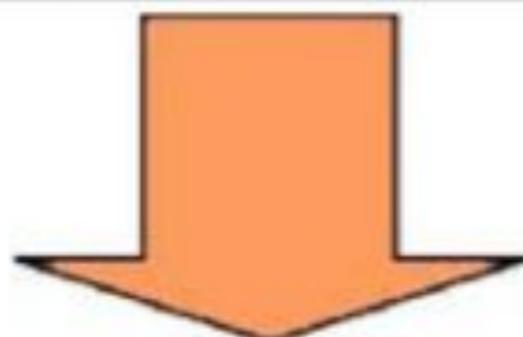
have different language abilities

have different cultural backgrounds





Representation Principle 1	Action and Expression Principle 2	Engagement Principle 3
Presenting information and course content in multiple formats so that all students can access it	Allowing students alternatives to express or demonstrate their learning	Stimulating students' interests and motivation for learning in a variety of ways



<p><i>Examples</i></p> <ul style="list-style-type: none">• Provide alternatives for accessing information (e.g., visual, auditory)• Provide or activate background knowledge in multiple ways (e.g., pre-teaching concepts, using advanced organizers)	<p><i>Examples</i></p> <ul style="list-style-type: none">• Provide options for responding (e.g., keyboard instead of pen to complete a writing assignment)• Provide options for completing assignments using different media (e.g., text, speech, film, music)	<p><i>Examples</i></p> <ul style="list-style-type: none">• Provide options that increase the relevance and authenticity of instructional activities (e.g., using money to teach math, culturally significant activities)• Provide options that encourage collaboration and communication (e.g., peer tutoring)
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Examples of Universal Design for Learning



Representation



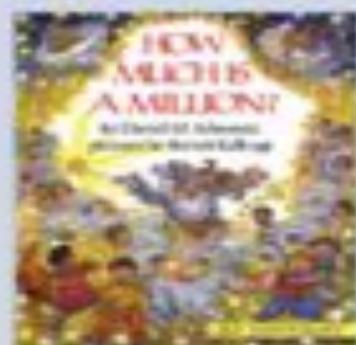
sound, music, audio



video



closed captioning



books & literature



presentation, lecture



magazines



graphs

Expression



drawing software



whiteboards



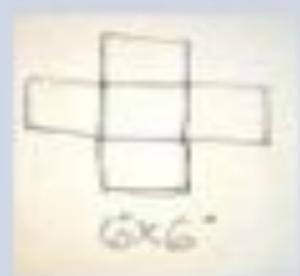
typing, essay



acting out/play



poster, arts & crafts



drawings



Speech to text, assistive technologies

Engagement



providing choices



interactive games



collaborating, teamwork



Self-reflecting on choices

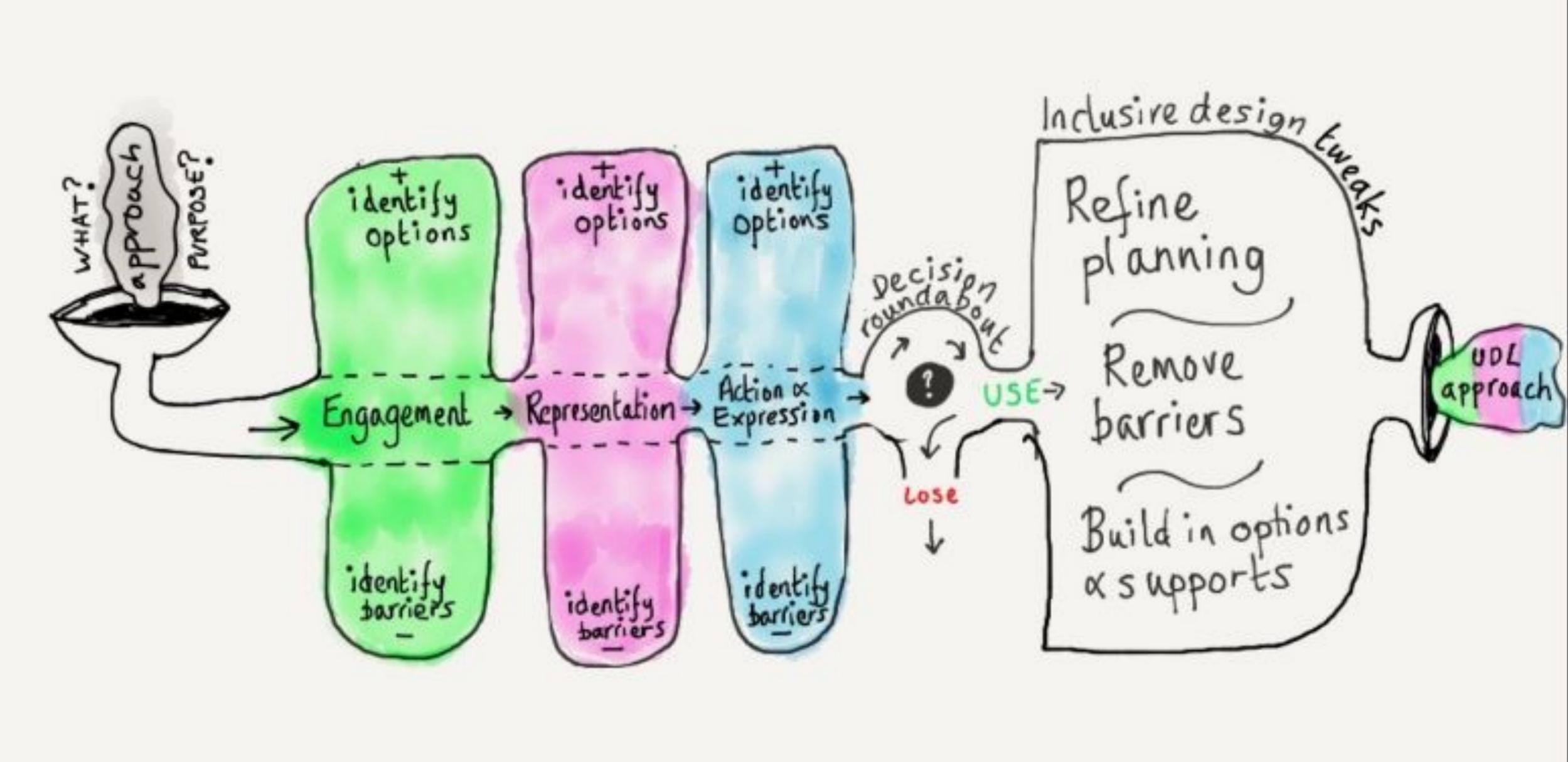


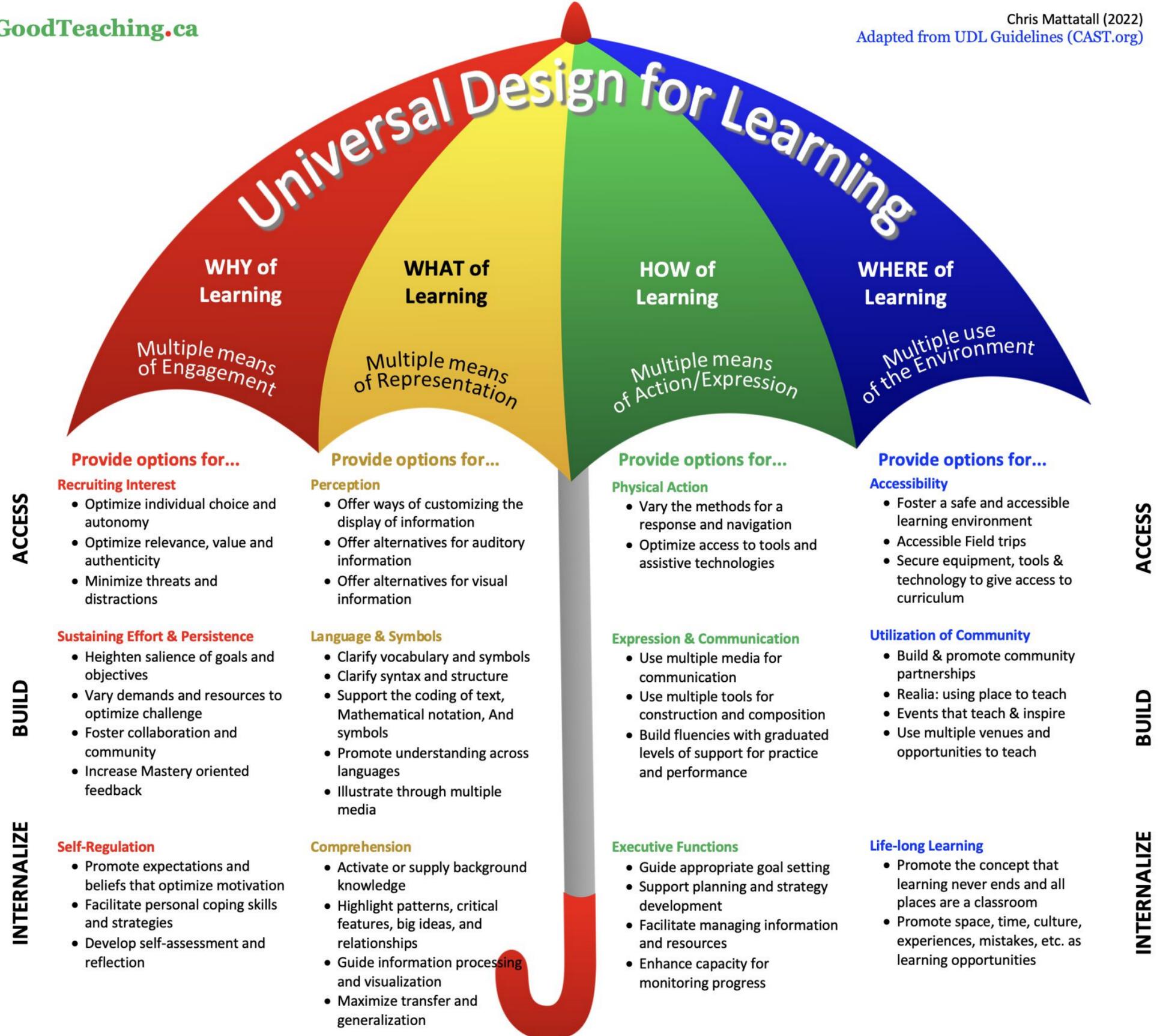
music, audio, cues for routines



real-life examples, taking pictures

Key Elements of UDL Lesson Planning





DIFFERENTIATION IS A PLANNING AND TEACHING METHOD APPLIED TO EACH COLUMN

Engagement (“Why” of Learning)





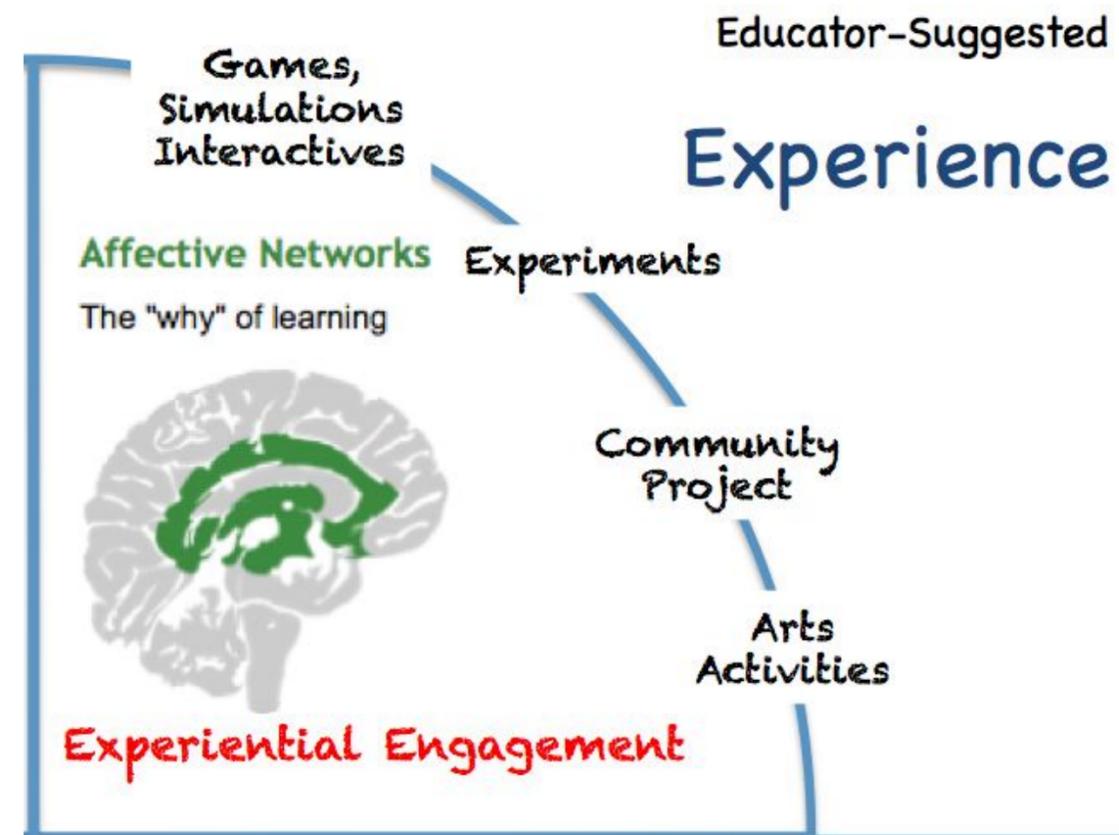
ENGAGEMENT

"The Why"

Providing interesting and motivating activities for the learning - designing activities and learning to meet the needs and the interests of the children in your care

Engagement

	
providing choices	interactive games
	
teamwork	self-reflecting on choices
	
music/audio cues for routines	real-life examples, taking pictures
	
personal goal setting	community project



active participation, exploration and experimentation

Design activities so that learning outcomes are authentic, communicate to real audiences, and reflect a purpose that is clear to the participants

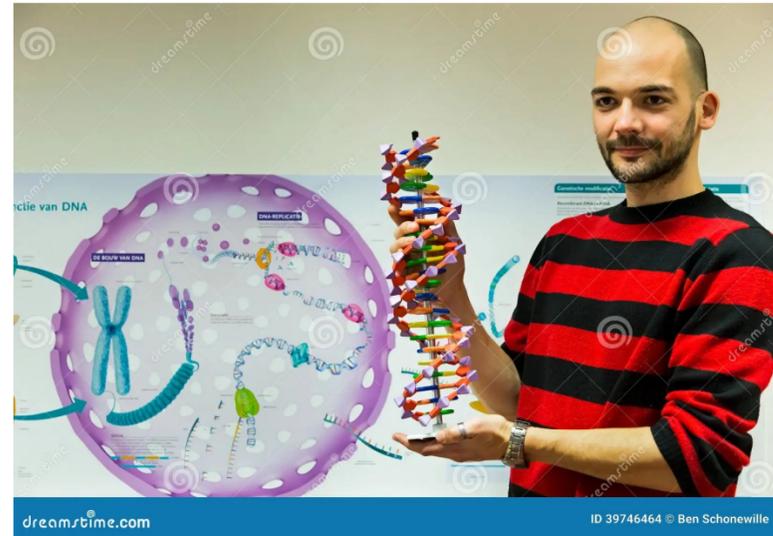
Invite personal response, evaluation and self-reflection to content and activities

Include activities that foster the use of imagination to solve novel and relevant problems, or make sense of complex ideas in creative ways

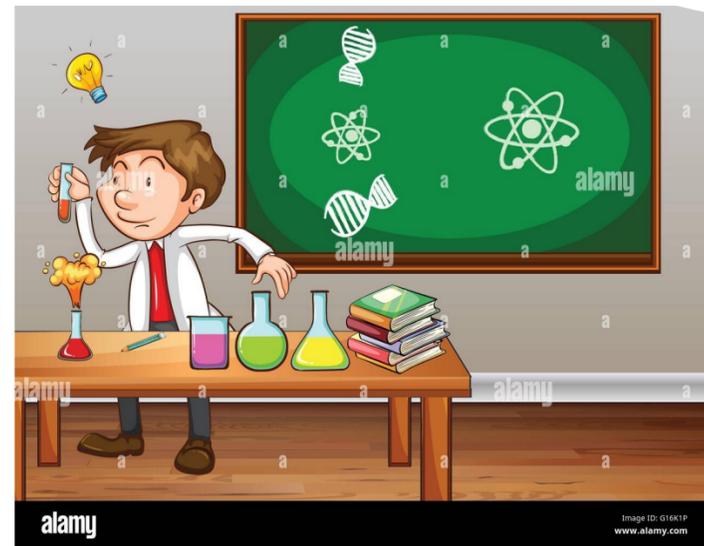
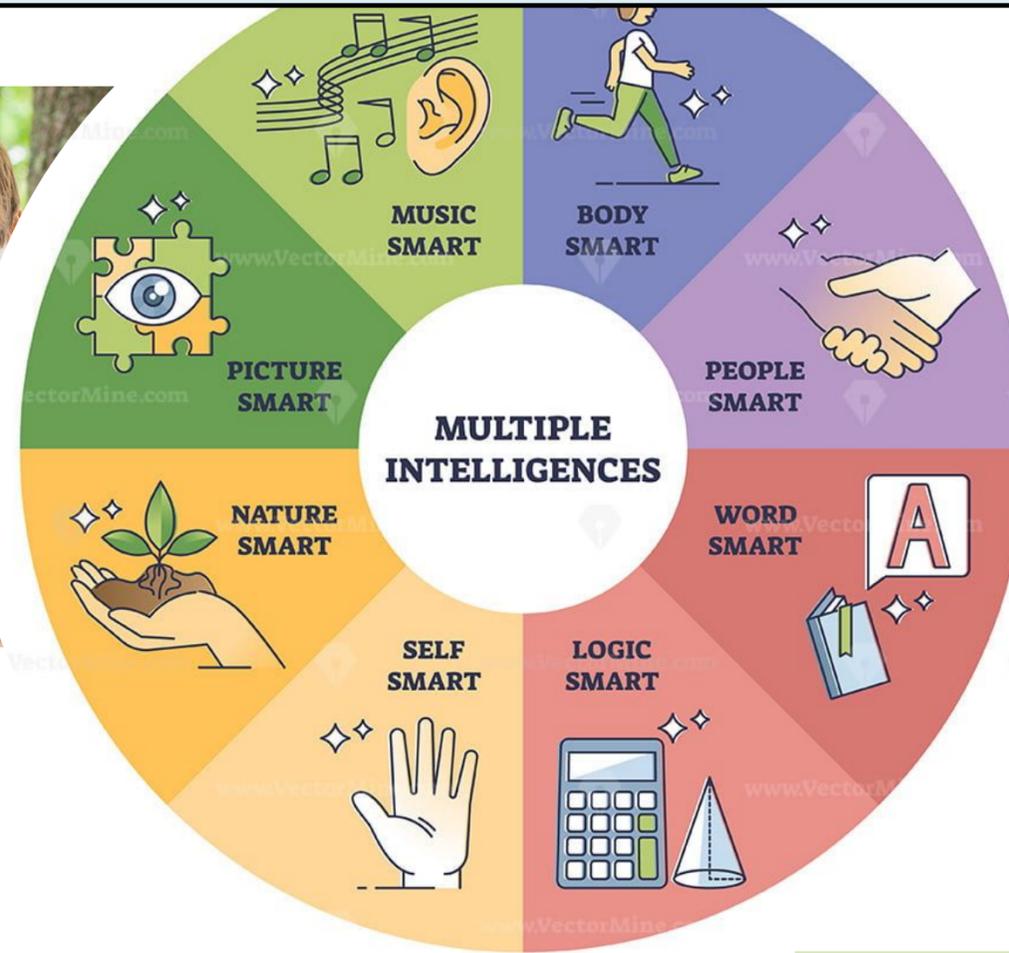
Create cooperative learning groups with clear goals, roles, and responsibilities – many of these activities require cooperative learning.

Representation (“What” of Learning)–

What do I do!!!



Different Means of Representation



My Very Educated Mother
Jupiter Saturn Uranus Neptune
Just Served Us Nachos!



REPRESENTATION

"The What"
understanding of what
you're learning - sharing
concepts that make sense
to the children in your care

UDL requires:

Multiple Means of Representation

Examples:

Manipulatives

Visual Displays

Anticipatory Guides

Graphic Organizers

Artifacts

Videos

Music

Movement

Text Readers

Concept Exploration

Recognition Networks

The "what" of learning



Content-Rich
Websites

Online
Chats

Audio
Lectures

Video
Lectures

What

Educator-Suggested

Action & Expression

(How I express my learning)





Solar System Song

The sun, a star, a center point
It shines its golden rays beyond

A place, in space, so far away
Nine planets revolving dusk till dawn

Mercury is first in line
Ve-nus known for its bright shine
Earth a world that's yours and mine

That will bring us right to **Mars, Mars, Mars,**
Mars

Jupiter, so big indeed
Saturn with its many colored rings

Ur-anus, is greenish blue
Neptune is the same size this is true

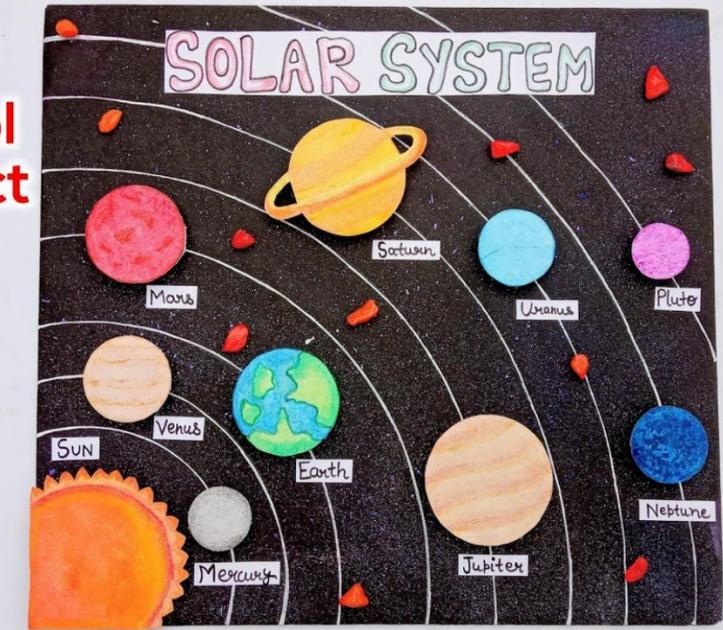
Pluto is the furthest one by far
And it's really just a star
Now you know where planets are

And that will bring us back to **Sun, Sun, Sun,**
Sun

©2001 David Noyes



3D
School
Project



Solar System Working Model - DIY

BIG



EXPRESSION

"The How"

Ways to demonstrate what you know - how children in your care will be able to show you what they are learning

UDL requires:

Multiple Means of Action and Expression

Examples:

Thumbs Up/Thumbs Down

Gallery Walks

Pair/Share

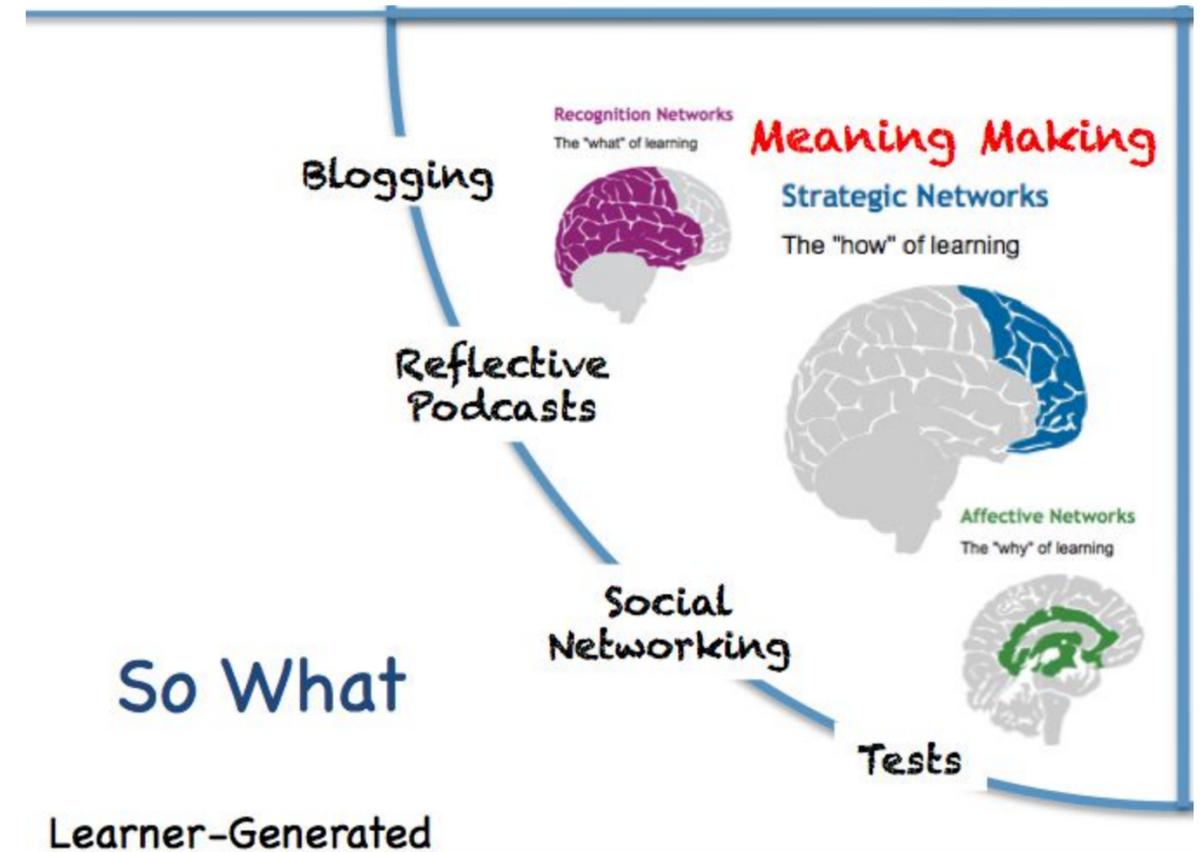
Chalkboard/Whiteboard Splash

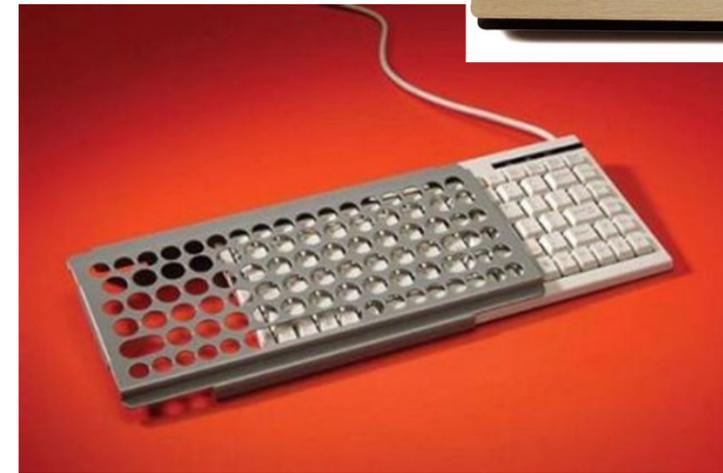
Response Hold-Up Cards

Quick Draws

Numbered Heads Together

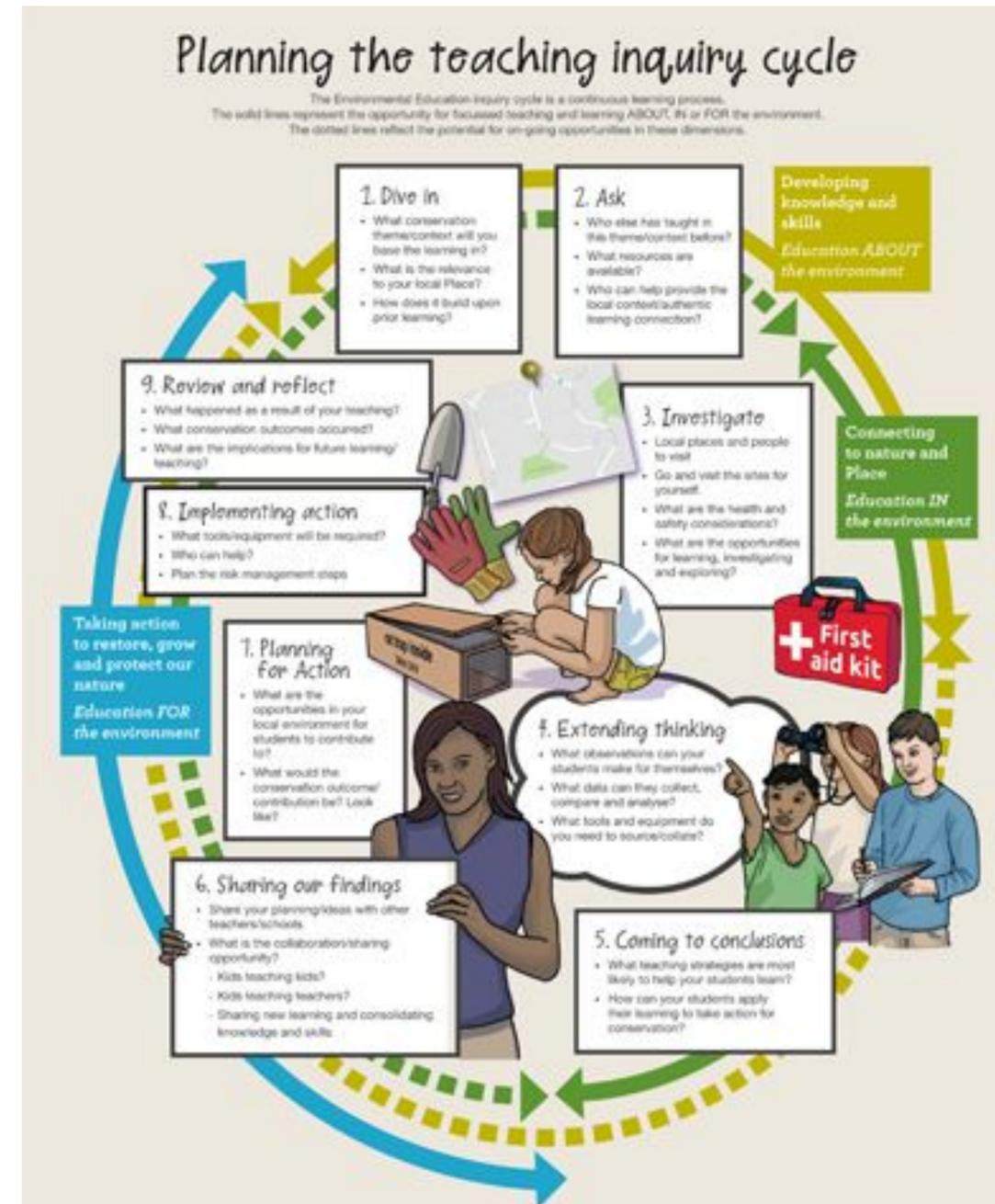
Line-Ups





One-Handed Keyboard Options

ULD facilitates Inclusive Education



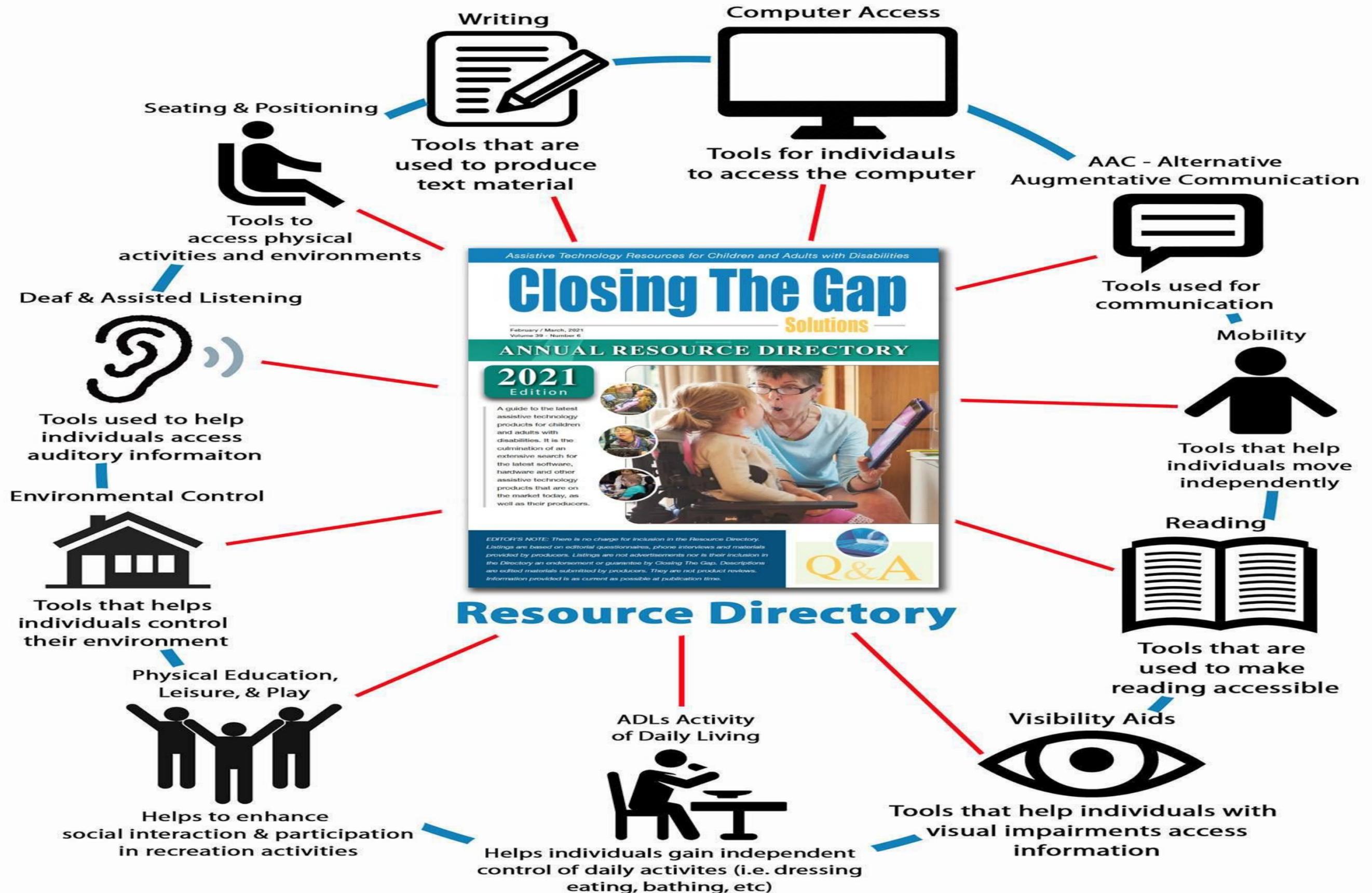
•
Does Technology facilitate UDL

Or

Is Use of Technology in the classroom called UDL



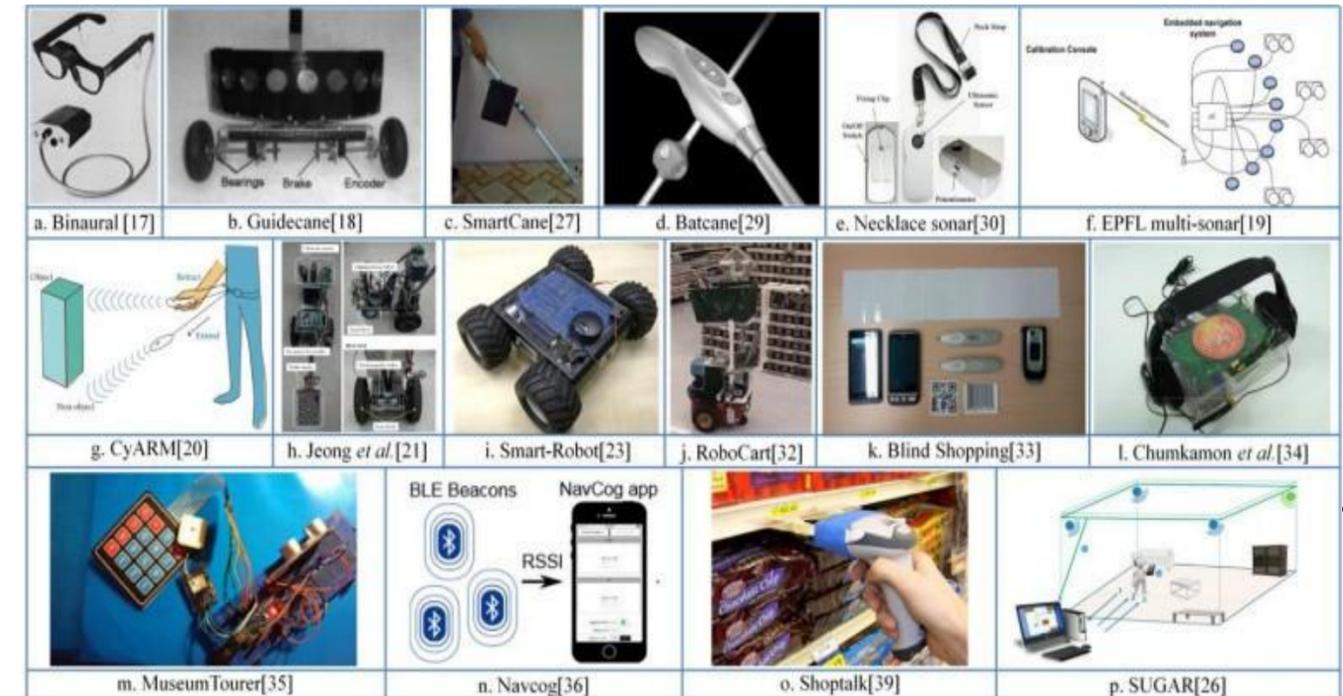
Types of Assistive Technology



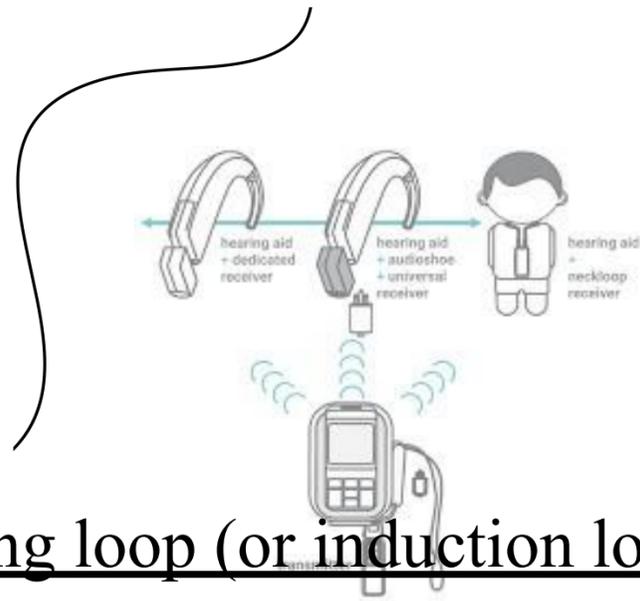
Assistive devices for children with visual impairment in class



- Screen Readers
- Camera Scanners, OCR and text -to- speech
- Smartphone text detection - OCR - text- to-speech apps
- Daisy Player
- Braille displays and notetakers Screen
- magnification
- Graphing and Maths Technology Audio Books



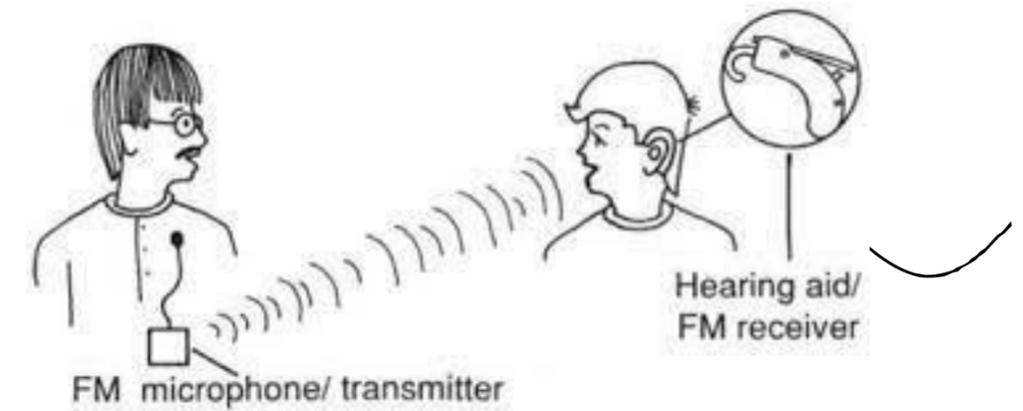
Assistive devices for children with Hearing impairment in class



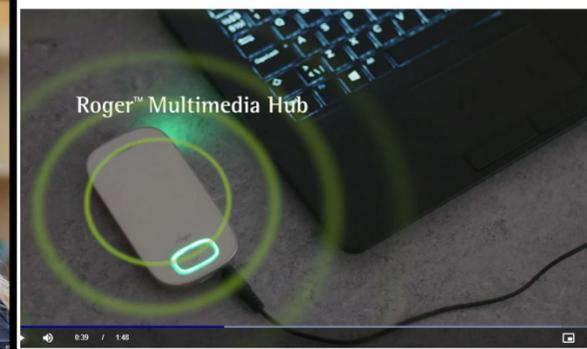
Assistive Technology

- Assistive Listening Device (ALD).
- Hearing Aids.
- Telecommunication Device for the Deaf (TDD).
- Infrared Systems.

(Assistive Technology For Students With Hearing Impairments, n.d.)



- Hearing loop (or induction loop) systems FM
- systems
- Infrared systems
- Personal amplifiers
- Roger™ SoundField products
- Bluetooth systems
- infrared system



Assistive devices for child with specific learning disability in class



• Mind mapping software

• **Scanning software and hand reading pens** **Spell checkers**

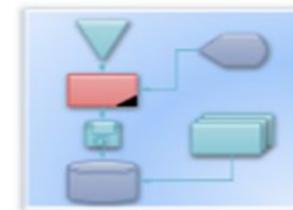
• **Smartpens**

• **Tablets, Smartphones and Applications** **Computer based**

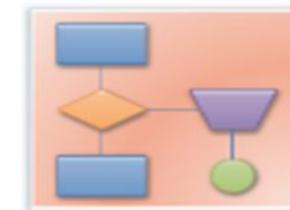
• **Learning programs** **Mind Mapping**

• **Dictaphones and Handheld Devices**

-
-
-



Audit Diagram



Basic Flowchart



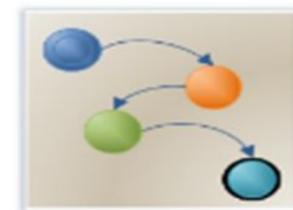
Brainstorming Diagram



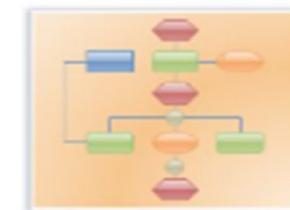
Cause and Effect (Fishbone)



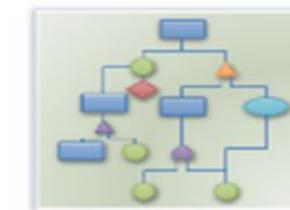
Circular Diagram



Data Flow Diagram



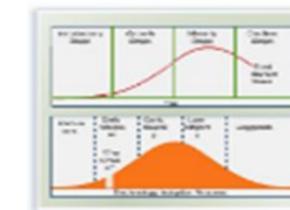
EPC



Fault Tree Analysis



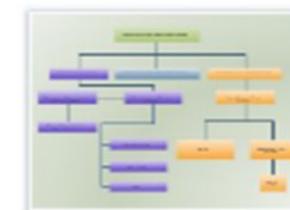
List and Process



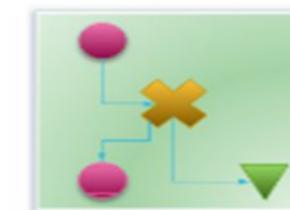
Marketing Charts and Diagrams



Matrix



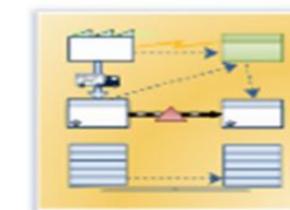
Organizational Chart



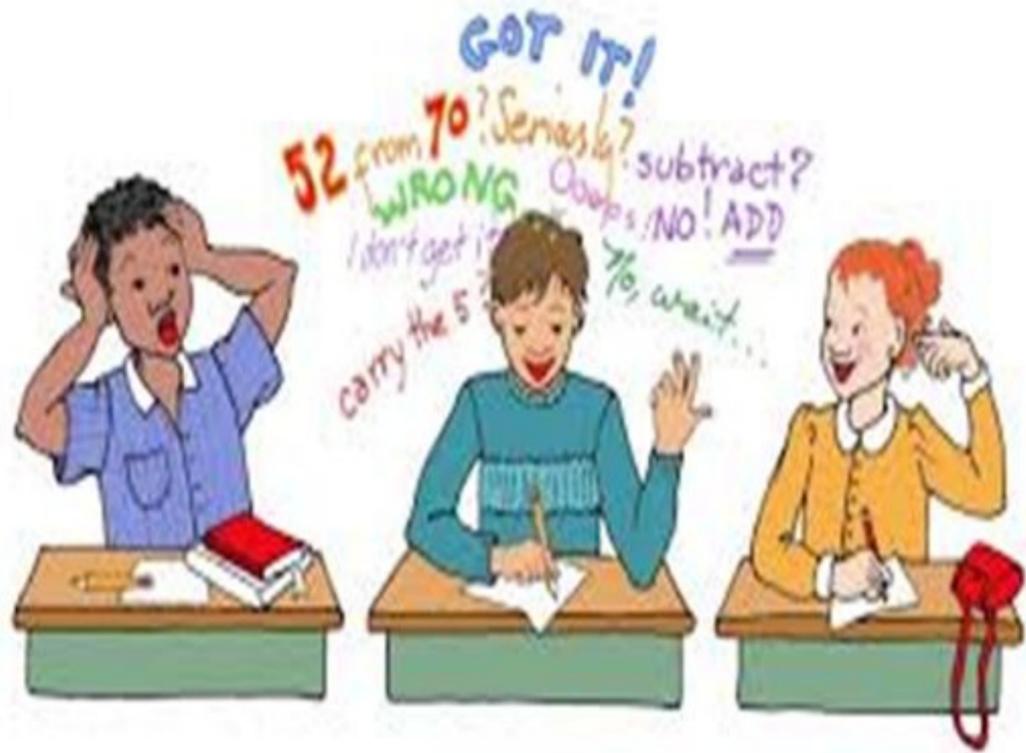
TQM



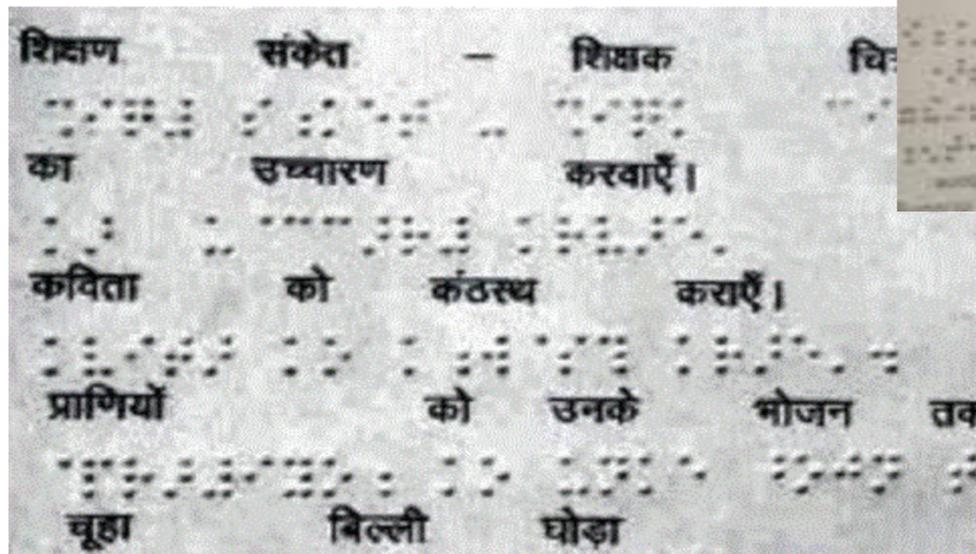
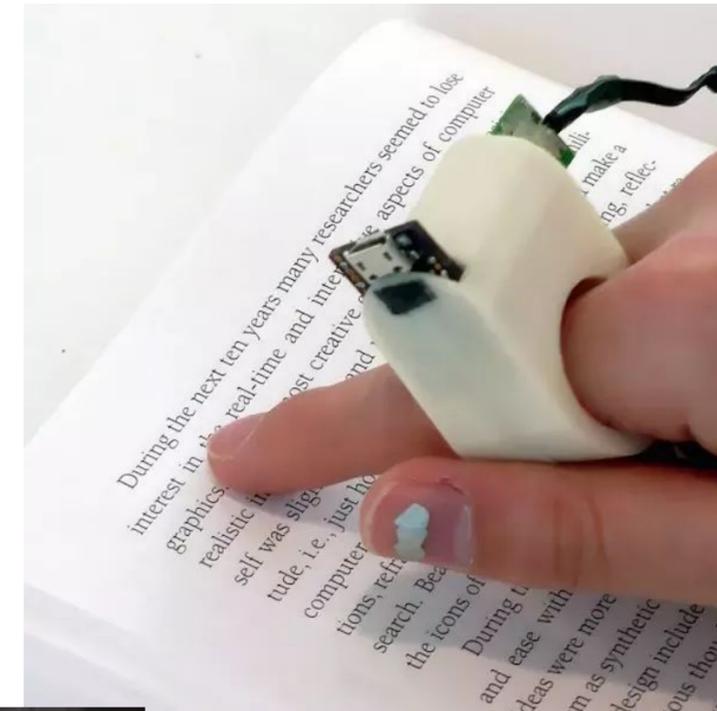
Work Flow Diagram



Value Stream Mapping



Steno SR - an assistive privacy microphone for speech recognition users



Using video (technology)



20 OF THE BEST FREE SCIENCE APPS FOR IOS

teachthought



iPad Apps for Learning Spelling

TEACH ME

Spell Phonics 1

Spelling Bus

Pogg

WORDS

SPELLING TEACHER

SPELL

Spelling Made Simple

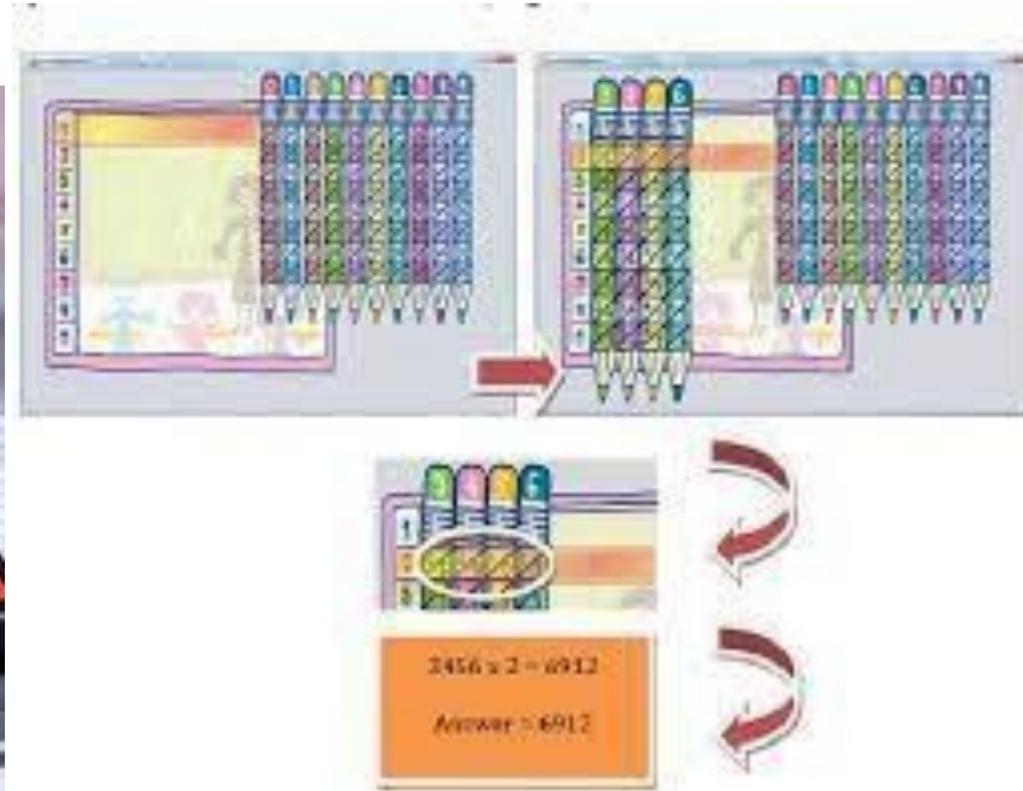
Sounds of Spelling

www.educatorstechnology.com

Assistive devices for child with ASD in class



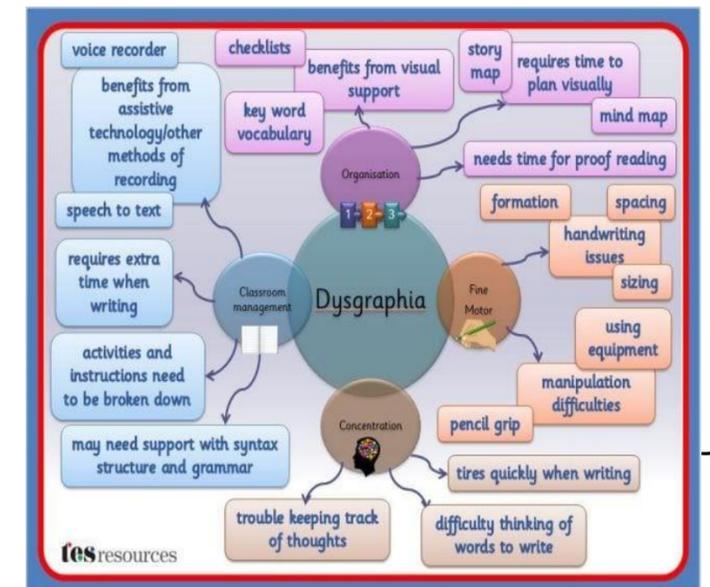
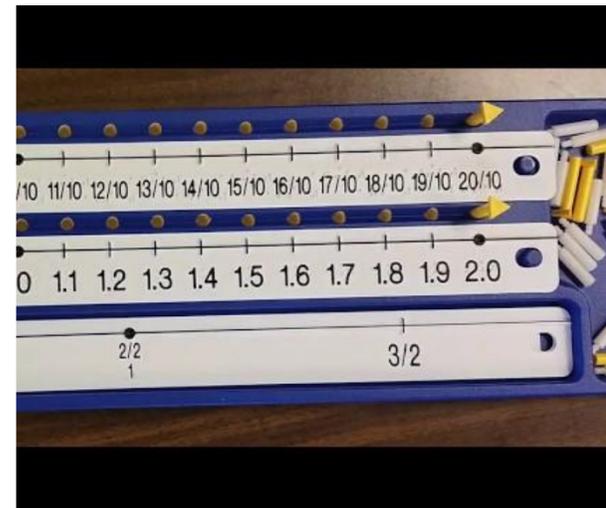
Assistive devices for dyscalculia



Assistive devices for dysgraphia



ASSISTIVE TECHNOLOGY For Writing ~Dysgraphia~



SHAPE

THE FUTURE OF SCHOOLS

The Future of Schools

How will tools, technology and pedagogy be shaping schools in 2040?



Gisella Langé



Mario Barosevic



Nik Peachey



Jason Tan



We are at the tip of the ED-TECH iceberg

people are excited to see what the children come up with!



we ask the learners

IDEAS

COLLABORATION

It enables ...

External Content

online dangers

a disconnect



am I a horrible solution?

Connecting everything



learning happens everywhere



online

Schools are important

over covid we had a learning loss



teachers need support to upskill

they are the **ENGINES** of schools!

technology not always the answer - need focus on pedagogy



wifi

access

we need collective leadership ...

... and critical thinking

VR



... and connects

learning HOW to learn!

What is the relationship like with on-line teachers?

Teacher or INFLUENCER?

TikTok Teacher

I learned everything from teacher Sam!



15 seconds... ... is it LONG ENOUGH?



both a **CELEBRITY** teacher!

Students of ALL ages!



Education for ALL

Partnership and Collaboration are **KEY!**

Learn from the **END USERS!**

Education happens where ideas are shared

I'm the protagonist of **NEW WAYS** of learning!



Be open-minded to what is coming

What needs to change?



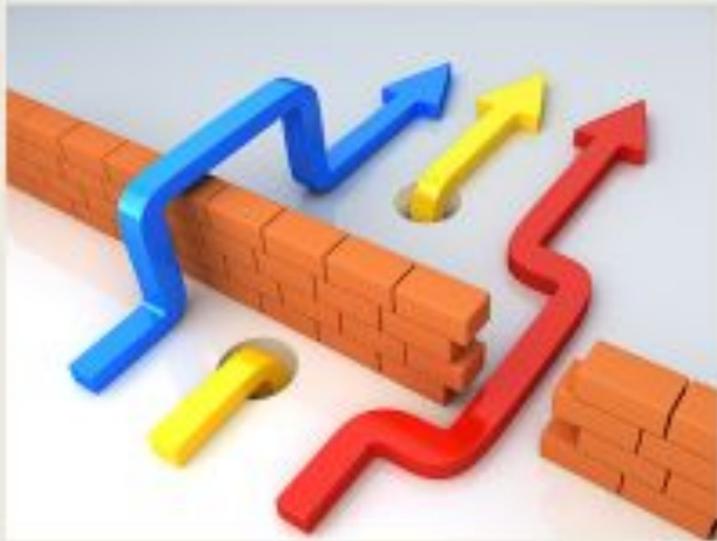
Technology facilitates Universal Design of Learning (UDL)

BUT

Only using Technology is NOT Universal Design of Learning
(UDL)

.

Thankyou



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21st centuries classes

COMPONENTS OF A

21st Century Classroom

Technology is undeniably changing the face of education, and it's easy to see the impact already. Imagine what classrooms will be like in 20 years with the speed of technological innovation. Learn more about some of the key advancements in the 21st century classroom.



of teachers have computers in their classroom...



...but just **1 in 5** feel their classrooms have the right level of technology

INCREASING THE PRESENCE OF THE FOLLOWING TECHNOLOGIES COULD CHANGE THAT RATIO DRASTICALLY

Real World Education

Project-based learning (PBL) teaches concepts, but also organization, articulation, project management and collaboration

Integrating life skills into education can improve student engagement and retention and prepare them for 21st century careers



Online Courses



Almost a third of all college students take at least one online course

Online enrollments saw 21% growth while overall higher education student population only saw 2% growth

Over 65% of education institutions count online learning as critical for long-term educational success



Games and Gamification



of teachers have used online games in the classroom

In one study, games raised average test scores:

91.5%
79.1%

With the use of digital games
Without the use of digital games

Learning Analytics

Help teachers assess top concerns and achievements related to their students



Registration for the Learning Analytics and Knowledge conference doubled between 2011 and 2012



One system claims to predict whether a student's likelihood of sufficient course completion with about 70% accuracy, highlighting risk factors for individual students



Open Source Textbooks

In the next decade, open source textbooks are expected to grow to 25% of the textbook market



6 in 10 students have used a digital textbook - just 4 in 10 had in 2011 -

By 2013, e-textbooks may comprise



of textbook revenue

81% of teachers believe tablets enrich classroom learning

86% of students believe they study more efficiently with tablets

1 in 5 students have used a mobile app to keep their coursework organized

29% of teachers use social media for coursework, compared to now 80% of college professors

59% of students would like to use their own mobile devices to enhance learning

Top 3 Reasons for Teachers to Use Technology in the Classroom



Adapt to diverse learning styles



Boost student motivation



Enhance the material being taught



Over 51% of colleges cited wireless upgrades as their tech priority in 2011-12 given the 60% increase in mobile devices on campus in the previous year

Integration of Social Networks

Engaging students with a free tool they already use can help them learn in new ways, gain focus and increase participation

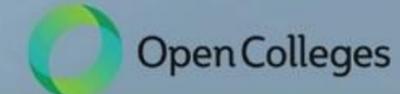


One social media pilot program assisted in a class' 50% rise in grades



4 in 10 students believe integrating social networks into the classroom would benefit their education

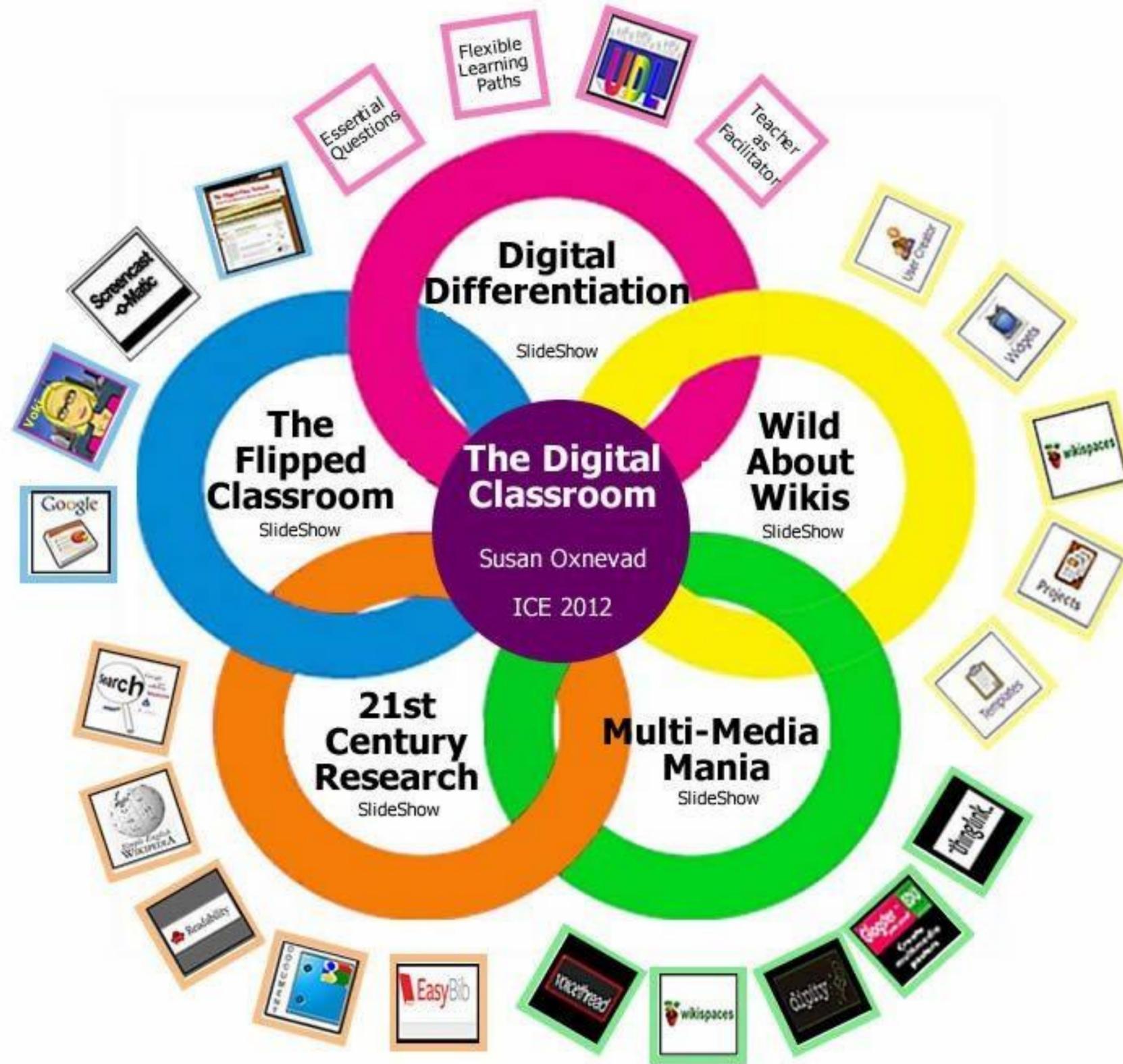
Sources: <http://www.pbs.org/about/news/archive/2012/teacher-survey-fetz/> • http://www.pearsonfoundation.org/downloads/PF_Tablet_Survey_Summary_2012.pdf • <http://www.nytimes.com/2011/11/24/world/americas/schoolwork-gets-sevopt-up-in-rush-to-go-digital.html?pagewanted=all> • <http://redcrunch.com/2012/02/16/open-source-textbooks/> • <http://www.peweb.com/releases/2011/8/peweb8708680.htm> • http://pearsonfoundation.org/downloads/PF_Tablet_Survey_Summary.pdf • <http://redcrunch.com/2012/02/16/open-source-textbooks/> • <http://patnickdunn.com/2011/10/15/trends-survey-says-wireless-networks-expand-for-mobile-growth/> • http://www.space.com/storage/blunt_game_studies.pdf • http://www.loancorridor.com/publications/survey-going-distance_2011 • <http://mashable.com/2011/09/29/social-media-in-school/> • <http://www.babson.edu/Academics/centers/blank-center/global-research/Pages/blabson-survey-research-group.aspx> • http://www.ontario.ca/peakup/pdfs/S111_Personalized_Learning_Students.pdf • <http://www.scholastic.com/brownsarticle.jsp?id=3751748> • http://thedailyemerald.com/news/article_db8310c0-4c10-11e1-8269-001871c3cc6c.html • http://www.bie.org/research/study/experimental_study_of_bie_project_based_economic_units • <http://www.research.com/OpenLearningAnalytics.pdf> • http://learninganalytics.net/AR_12_Any-note_Siemens.pdf



Universal Design for Learning Guidelines



21st centuries classes

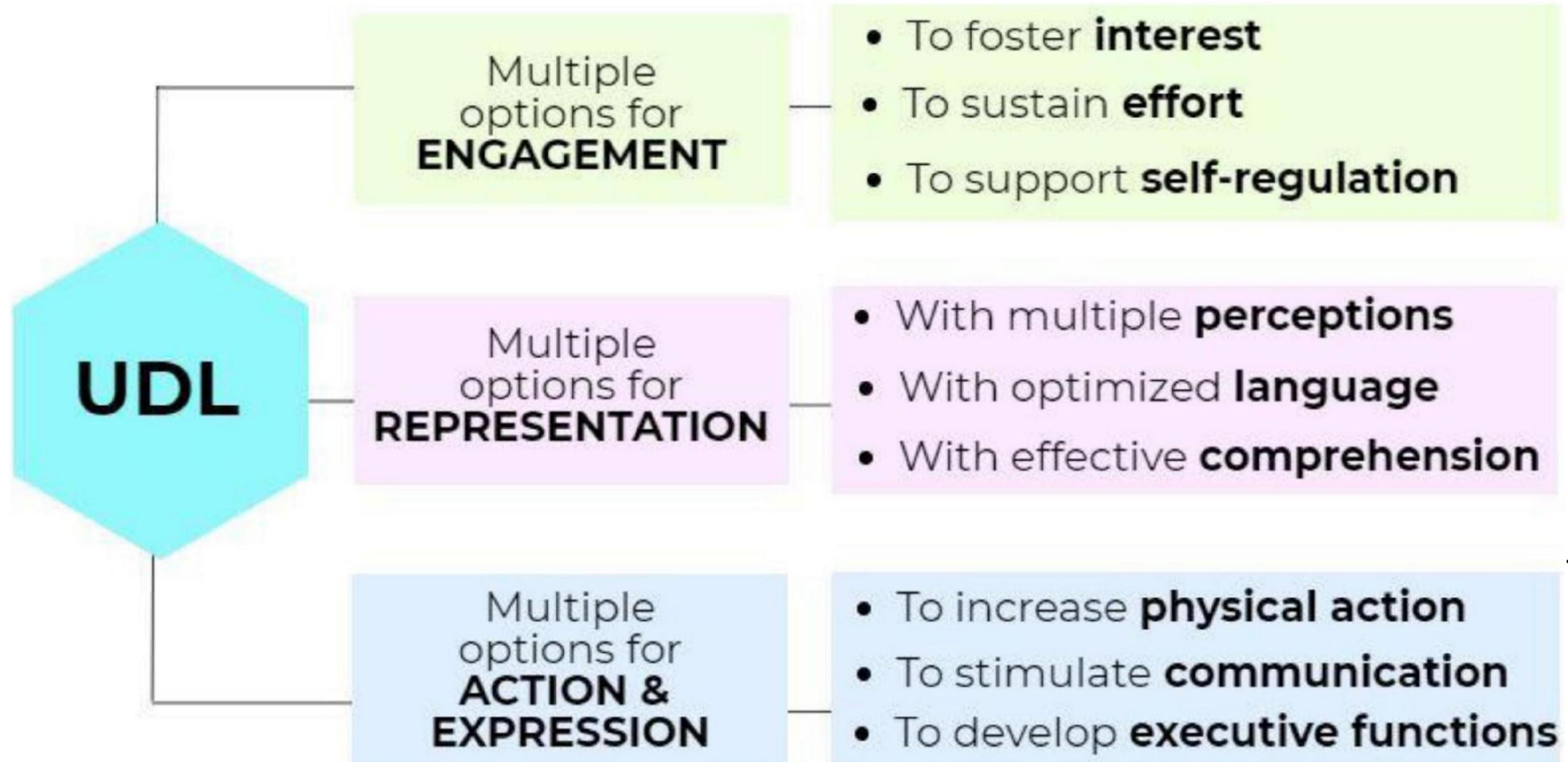


Different Educational Practice

Traditional Approach	Inclusive Approach
Education for some	Education for all
Static	Flexible
Collective teaching	Individualized Teaching
Learning in segregated areas	Learning in Integrated areas
Emphasis on teaching subject-orientated	Emphasis on learning child-centered
Diagnostic / prescriptive	Holistic
Opportunities limited by exclusion	Equalizations of opportunities for all
Disability view	Curricular view
Labels children disability wise	Planning is made on ability levels and opposes all kinds of labelling

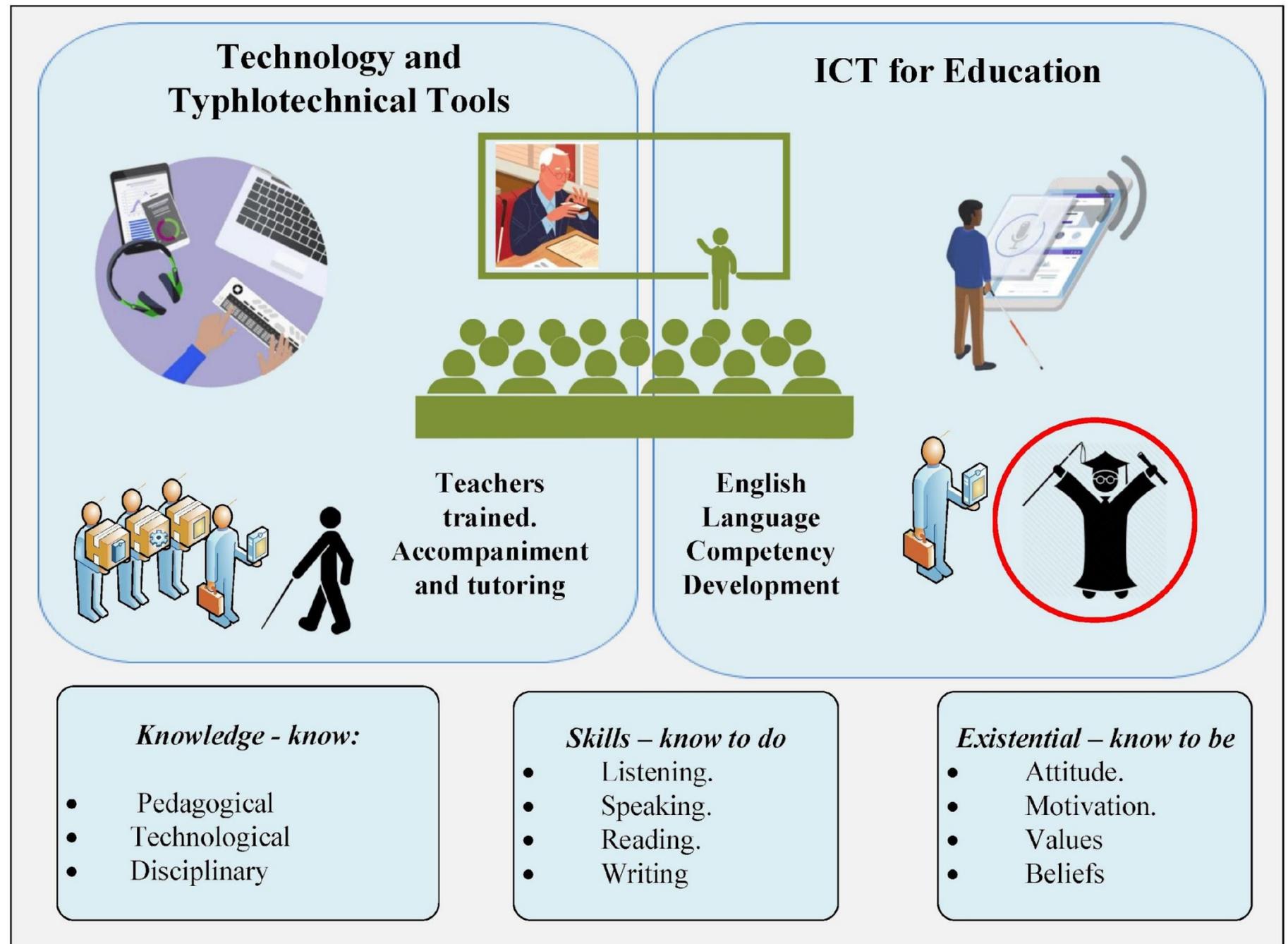
SPECIAL EDUCATION	INTEGRATED EDUCATION	INCLUSIVE EDUCATION
Special education is a system of education that responds to the needs of children with disabilities outside mainstream education	Integrated education is provided within the general classroom where the special needs students learn alongside their peers without disabilities	Inclusive education is a system where all special need students, as well as the general students, get equal benefits, welcoming the diversity of the students and changing accordingly
Approach is more individual-centred; the mode of teaching and the content is designed separately in accordance with the needs of individual students	Students with special needs are expected to adapt to the general curriculum	Follows an 'education for all' approach
Less challenging for special needs students	More challenging for special needs students	Less challenging for special needs students
Can take place in a general classroom, resource room or even in a specialized school	Take place within the general classroom	Take place within the general classroom
Students may find it hard to readjust and mingle with their families, peers, and communities	Boost the confidence of the special need students as it gives them a chance to mingle with general peers	Boost the confidence of the special need students as it gives them a chance to mingle with general peers

The 3 major components of UDL



There are eight areas of application

- Inclusiveness
- Physical Access
- Delivery Methods
- Information Resources
- Interaction
- Feedback
- Assessment
- Accommodation



Technology Use for Teacher Professional Development

