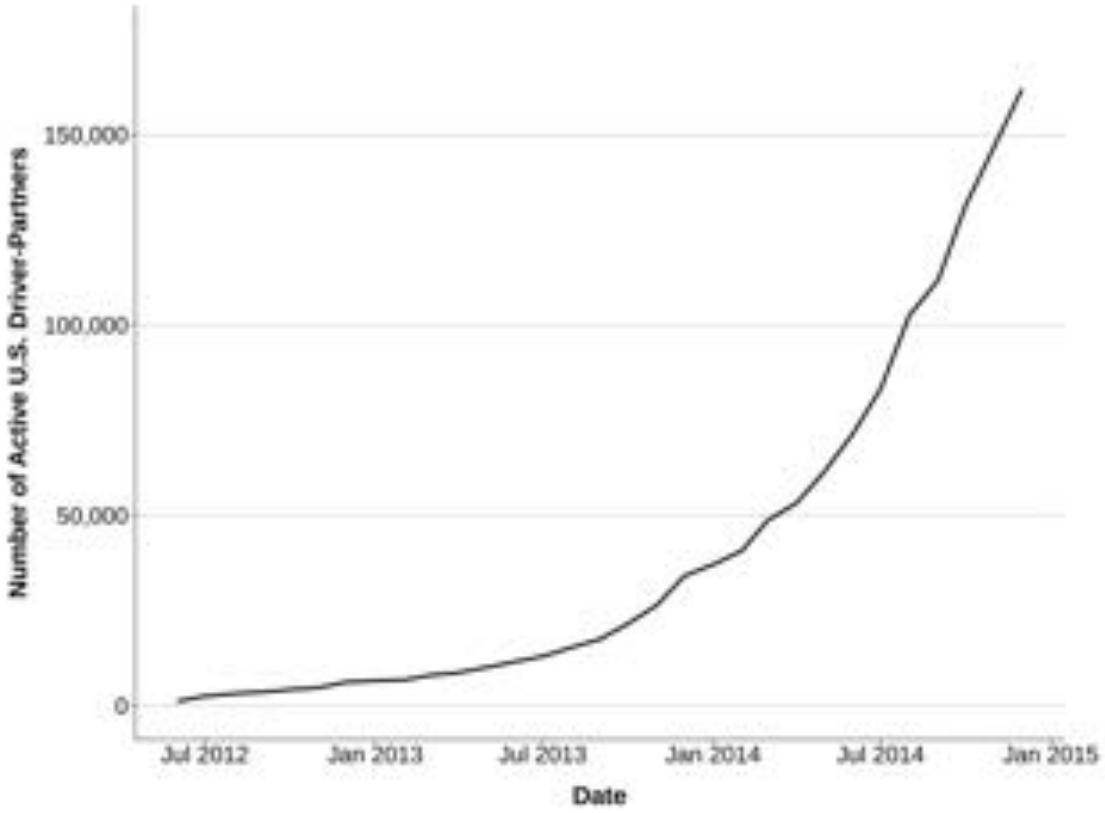
21st C & Socio-emotional Skills for Boys Schools in South Africa

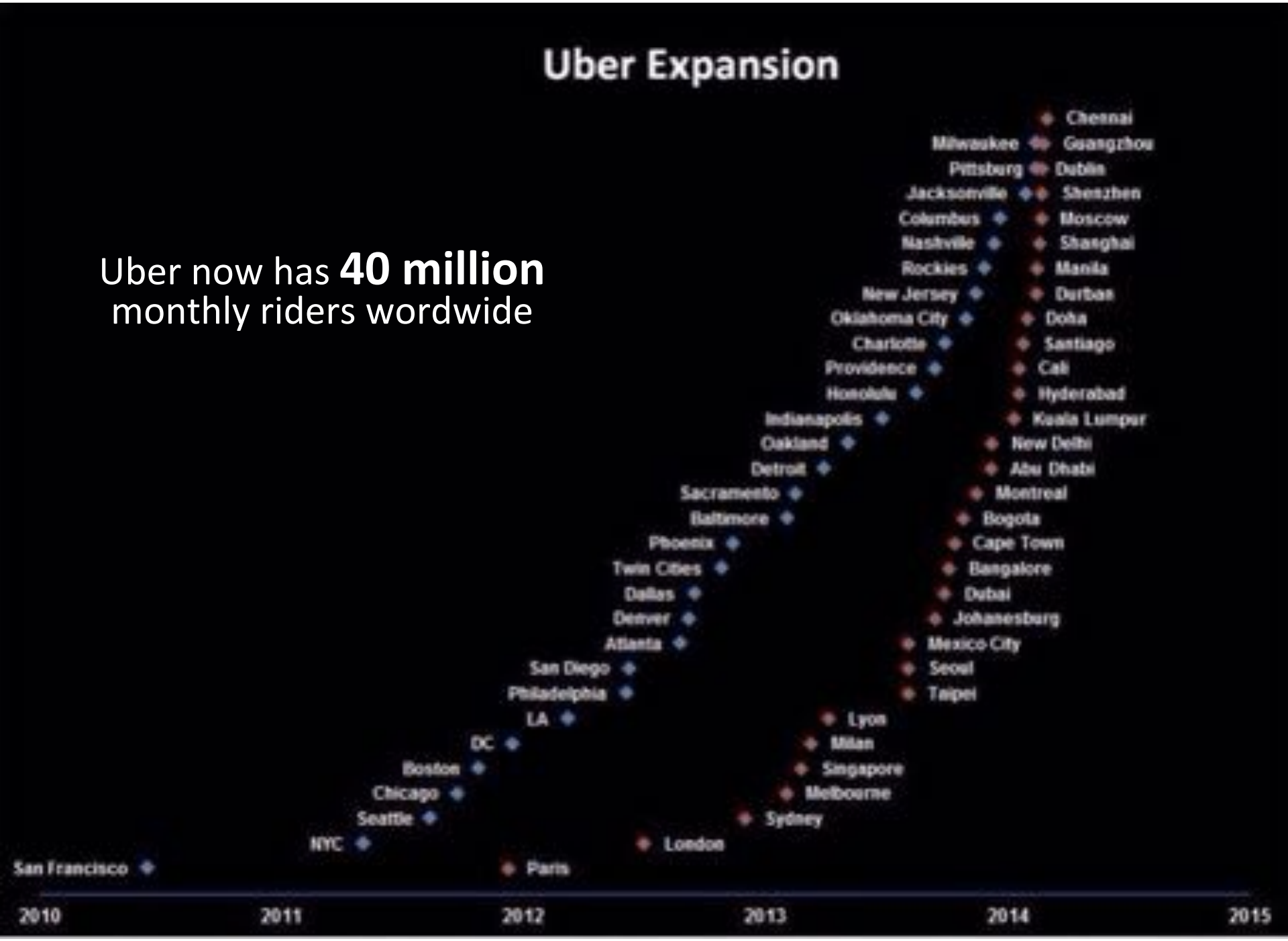
Nic Spaull | www.NicSpaull.com | 11th March 2017


Preparing students for jobs that
don’t yet exist

UBER

Figure 1: Number of Active Driver-Partners in United States Each Month




Uber Expansion
Uber now has **40 million** monthly riders wordwide
San Francisco
NYC
Seattle
Chicago
Boston
DC
LA
Philadelphia
San Diego
Atlanta
Denver
Dallas
Twin Cities
Phoenix
Baltimore
Sacramento
Detroit
Oakland
Indianapolis
Honolulu
Providence
Charlotte
Oklahoma City
New Jersey
Rockies
Nashville
Columbus
Jacksonville
Pittsburg
Milwaukee
Paris
London
Sydney
Melbourne
Singapore
Milan
Lyon
Taipei
Seoul
Mexico City
Johanesburg
Dubai
Bangalore
Cape Town
Bogota
Montreal
Abu Dhabi
New Delhi
Kuala Lumpur
Hyderabad
Cali
Santiago
Doha
Durban
Manila
Shanghai
Moscow
Shenzhen
Dublin
Guangzhou
Chennai
2010
2011
2012
2013
2014
2015

Robotics

The Auto-auto

>1m km,

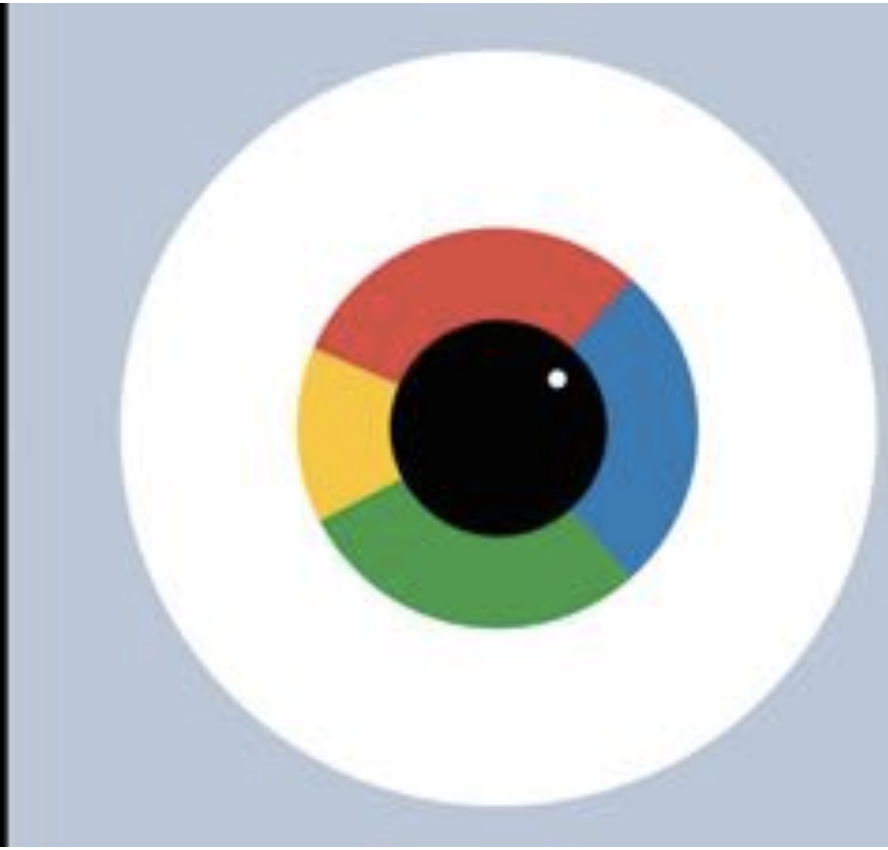
one minor accident,

occasional human intervention

The Great A.I. Awakening

How Google used artificial intelligence to transform Google Translate, one of its more popular services — and how machine learning is poised to reinvent computing itself.

BY GIDEON LEWIS-KRAUS DEC. 14, 2016



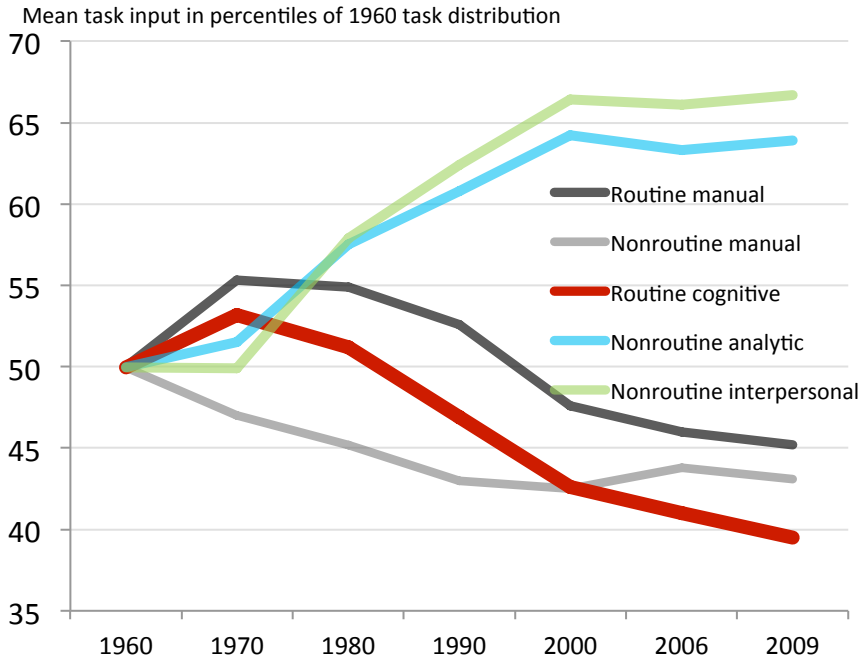
Virtual Reality (VR)

Mixed Reality (MR)

magic leap

Waking up with Mixed reality…

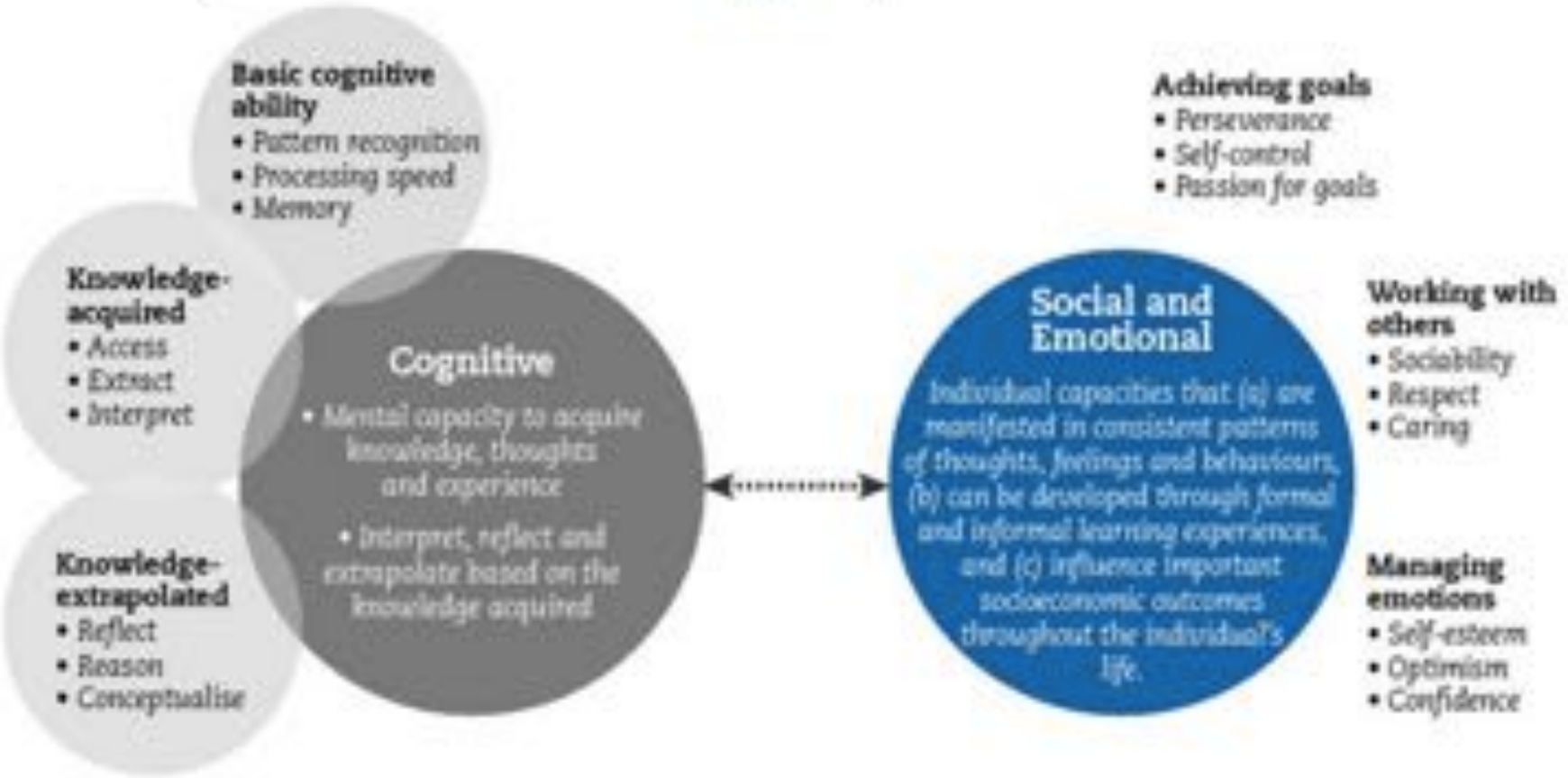
The kind of things that are easy to teach are now easy to automate, digitize or outsource

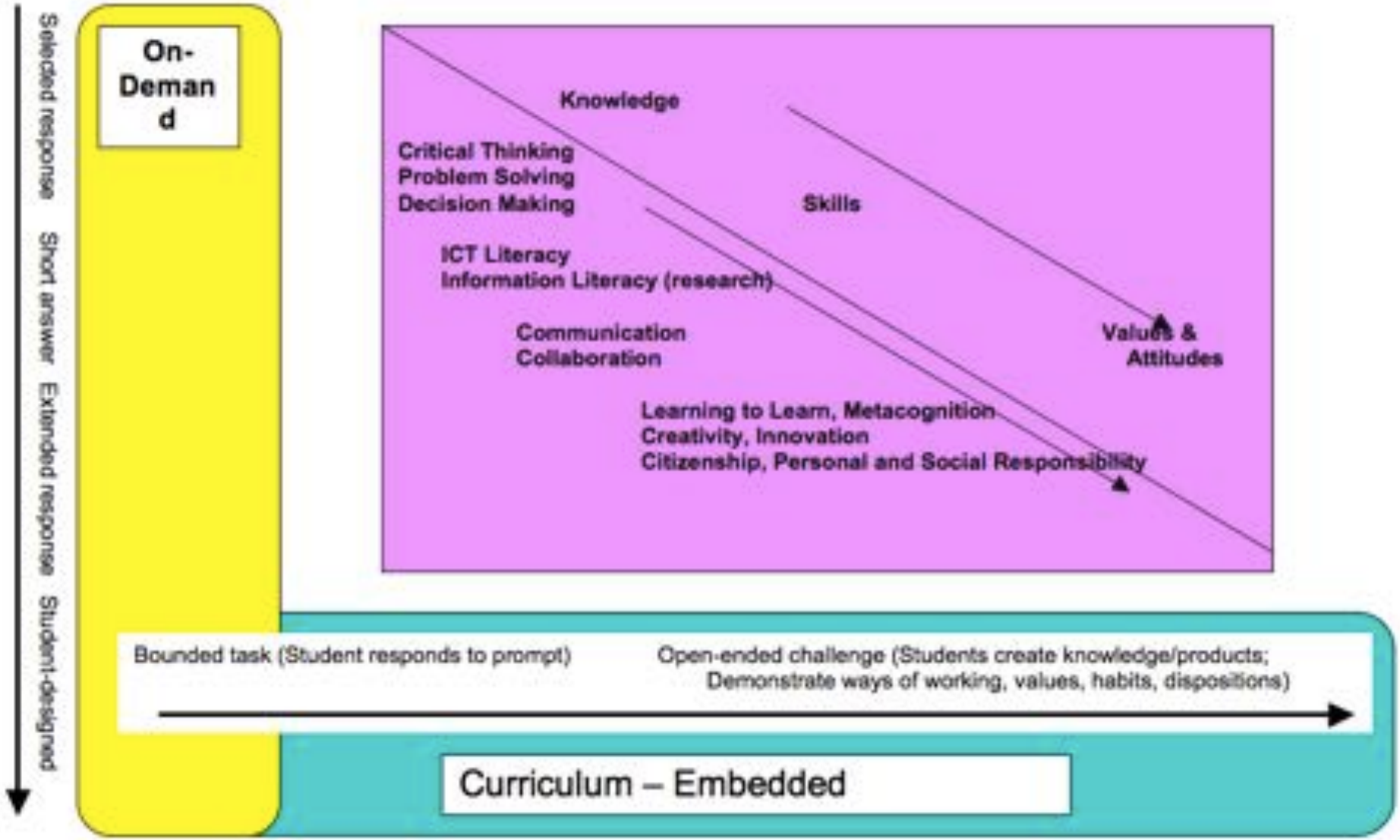


Source: Schleicher (2016)


The New Vision for Education

Figure 2.3. **A framework for cognitive, social and emotional skills**





Draft White Paper 5 - Policy frameworks for new assessments
Linda Darling-Hammond 2015


WHAT ARE 21ST CENTURY SKILLS? THESE 4 C'S:
C
COMMUNICATION
Sharing thoughts, questions, ideas & solutions
C
COLLABORATION
Working together to reach a goal. Putting talent, expertise, and smarts to work
C
CRITICAL THINKING
Looking at problems in a new way and linking learning across subjects & disciplines
C
CREATIVITY
Trying new approaches to get things done equals innovation & invention


HOMES AND COMMUNITIES
SCHOOLS
CLASSROOMS
SELF-AWARENESS
SELF-MANAGEMENT
SOCIAL AND EMOTIONAL LEARNING
SOCIAL AWARENESS
RESPONSIBLE DECISION-MAKING
RELATIONSHIP SKILLS
SEL CURRICULUM AND INSTRUCTION
SCHOOLWIDE PRACTICES AND POLICIES
FAMILY AND COMMUNITY PARTNERSHIPS

SOCIAL AND EMOTIONAL LEARNING (SEL) COMPETENCIES

SELF-AWARENESS

The ability to accurately recognize one's own emotions, thoughts, and values and how they influence behavior. The ability to accurately assess one's strengths and limitations, with a well-grounded sense of confidence, optimism, and a "growth mindset."

- Identifying emotions
- Accurate self-perception
- Recognizing strengths
- Self-confidence
- Self-efficacy

SOCIAL AWARENESS

The ability to take the perspective of and empathize with others, including those from diverse backgrounds and cultures. The ability to understand social and ethical norms for behavior and to recognize family, school, and community resources and supports.

- Perspective-taking
- Empathy
- Appreciating diversity
- Respect for others

RESPONSIBLE DECISION-MAKING

The ability to make constructive choices about personal behavior and social interactions based on ethical standards, safety concerns, and social norms. The realistic evaluation of consequences of various actions, and a consideration of the well-being of oneself and others.

- Identifying problems
- Analyzing situations
- Solving problems
- Evaluating
- Reflecting
- Ethical responsibility

SELF-MANAGEMENT

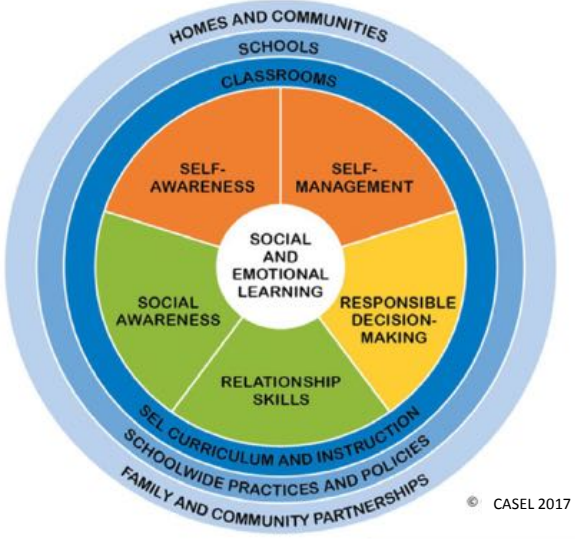
The ability to successfully regulate one's emotions, thoughts, and behaviors in different situations — effectively managing stress, controlling impulses, and motivating oneself. The ability to set and work toward personal and academic goals.

- Impulse control
- Stress management
- Self-discipline
- Self-motivation
- Goal setting
- Organizational skills

RELATIONSHIP SKILLS

The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. The ability to communicate clearly, listen well, cooperate with others, resist inappropriate social pressure, negotiate conflict constructively, and seek and offer help when needed.

- Communication
- Social engagement
- Relationship building
- Teamwork

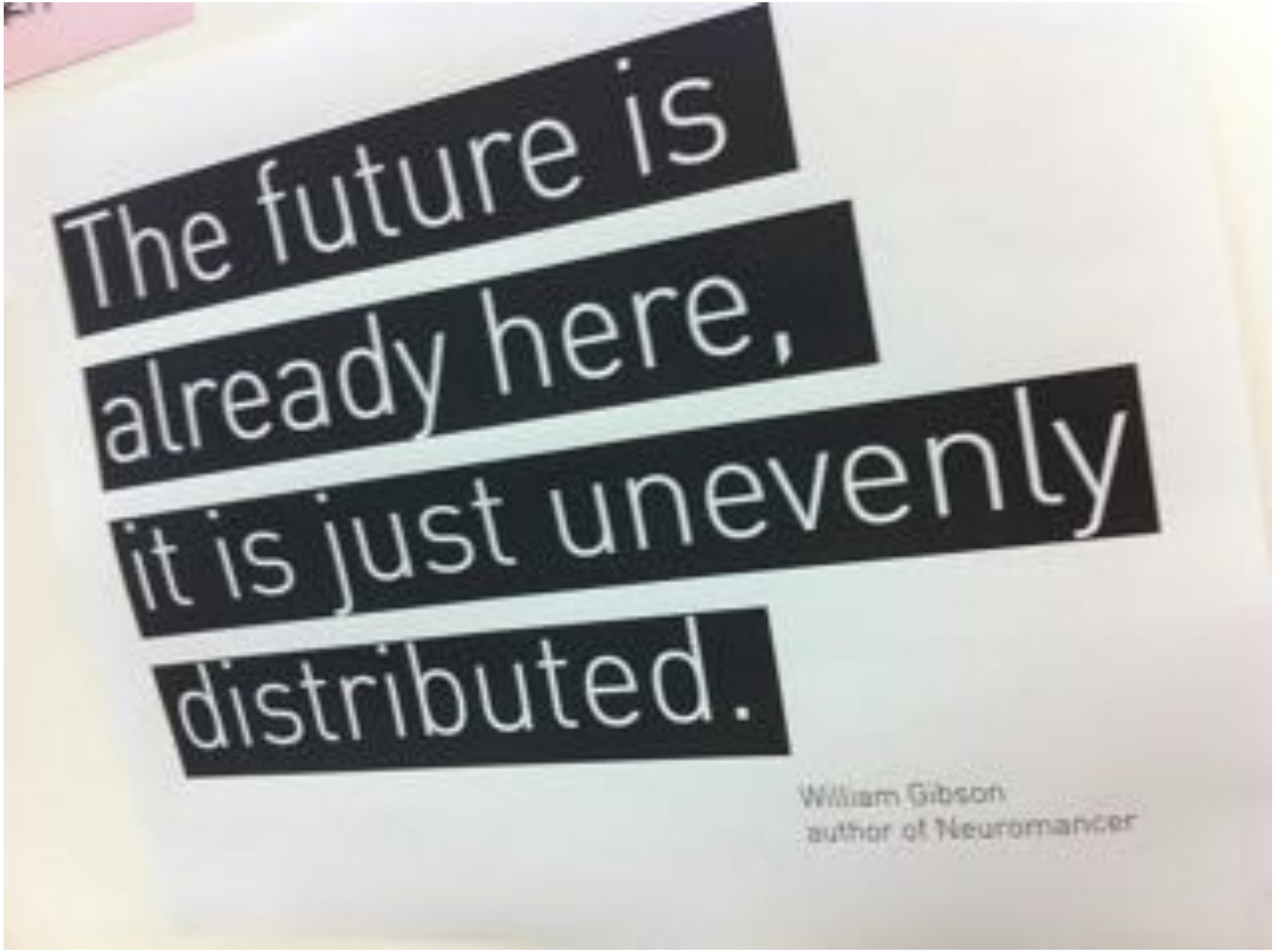


1882

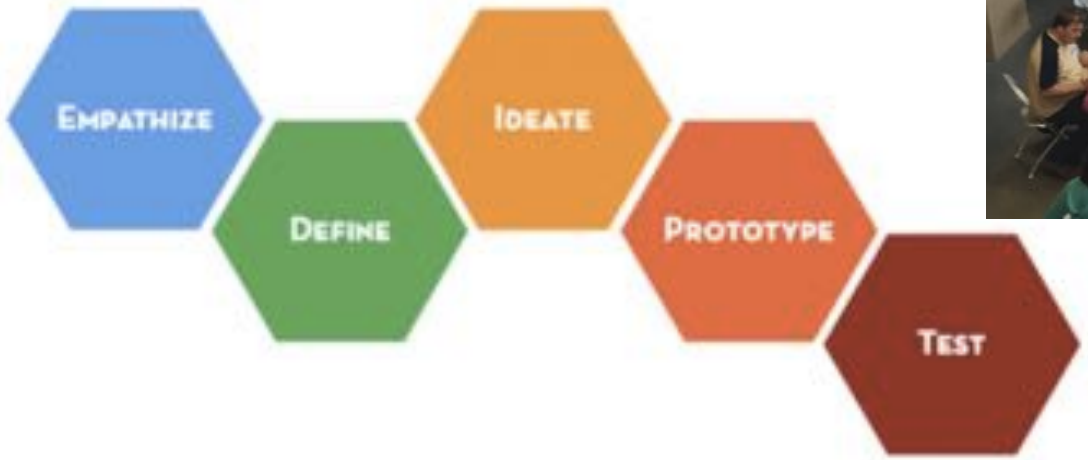
2014


2016

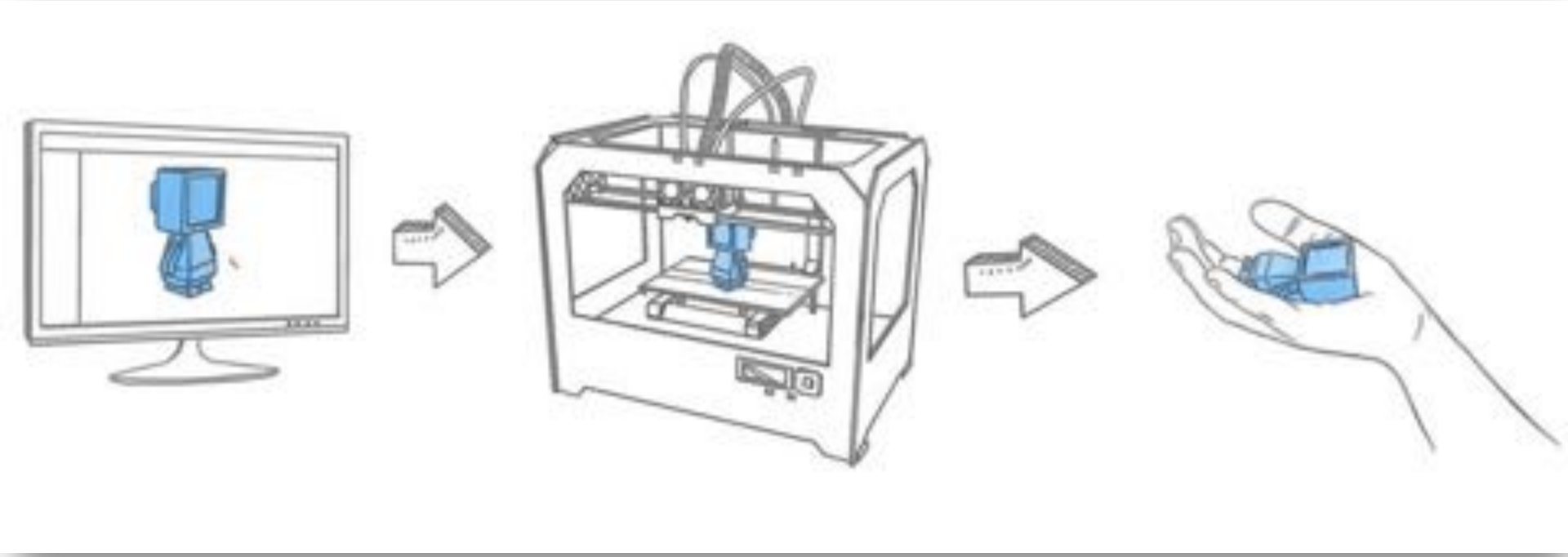

2017


The future is
already here,
it is just unevenly
distributed.
William Gibson
author of Neuromancer

Design thinking…



3-D Printing



Crawford College La Lucia

Crawford College La Lucia Grade 8's are helping print a prosthetic hand for Bongani.

Examples

-Inter-grade teaching
-team teaching
-combined-subject teaching
-Explicitly teaching a curriculum of socio-emotional skills like empathy (21C skills)
- 'FuckUp Nights' – stories of failure
-Permanent high-speed wifi (obvs)
-Drone-building classes
-robotics classes in school time
-Arduinos
-Raspberry Pi (costs R500)
-coding classes
-MakerSpace labs / FabLabs
-3D-printers

THE MAKERSPACE

Kersney College Trebuche Day

Join us at our space

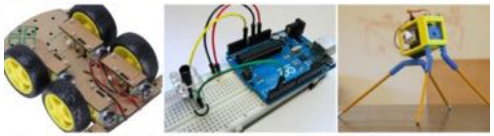
- 1 hour talk at our space on technologies such as 3D printing & laser cutting R1500 max 30 learners.
- Trebuchet design R400 per learner
- Leather craft R450 per learner
- 3D printing demo (1 hour) R1500, can be at your school or at our premises.

Use our space for your co-curricular

- R200 per month per learner
+ materials costs.

Holiday Programme

- 3D printing day R600 pp
- Laser cutting day R600 pp
- Arduino electronics day R600pp
- Robot Making (3 days) R1700pp



Learn: Arduino, Laser cutting & 3D printing

Who We Are

About Us

The MakerSpace is a platform designed to inspire learning and innovation. The project aims to unlock the latent creativity within every person and enable them to express their creativity in a physical way. The Goal is to develop infrastructure over 200 physical locations around Southern Africa to remove the barriers of entry for people to engage in the maker movement and develop the things they dream of.

Contact Us

Phone: Steve 0836122125
Cari 0722107909
Email: steve@themakerspace.co.za
cari@themakerspace.co.za
Web: www.themakerspace.co.za
Facebook: The MakerSpace Foundation
Address: 43 Station Drive, Berea, Durban

Toxic masculinity

You're such a girl

Grow a pair.

Don't be such a pussy.

My sister could throw further.

You're such a homo.

Man up.

You're such a naf.

Don't be a wimp.

Faggot.

Don't be a girl.

That's so gay.

Masculinity

Success for Some	Success for Many
Only some can attain & perform the narrow criteria of masculinity: physically strong, sporty, well-liked, alpha-male + hierarchy.	Universally attainable values are emphasised (courage, empathy, integrity, leadership, hard-work etc.)
Do not be perceived as **weak**	Do not be perceived as **inauthentic**
External is emphasised - appearance	**Internal** is emphasised
Achievement in **traditional sports** emphasised: Rugby, cricket, water-polo (strong hierachy of 'acceptable' sports)	Achievement in **all areas praised equally**: drama, music, debating, hockey, art, dance etc.
School approval is conditional on **achievement**	School approval is conditional on **growth, effort & values**
Self-worth tied to performance and outcomes	**Self-worth** is innate
Shame: I am something wrong	**Guilt**: I did something wrong
Values emphasised: leadership, resilience, heroism, toughness, individuality	Values emphasised: empathy, compassion, vulnerability, courage

Success for Some	Success for Many
Scarce: Only some can attain the very limited criteria of success	**Expansive:** Many can attain some version of an expansive vision of success
Exclusive: Typically those with power/ privilege benefit most	**Inclusive:** Many benefit, including those without power/privilege
Individual focus	Team focus
Primarily competitive - only some can win or attain the scarce resource/goal	**Primarily collaborative** - 'winning' isn't the aim.
Ego and **fear** are driving force	**Interest, passion** & **goals** are driving forces (flow)
Your success means my failure	Your success and my success are both attainable

Some empirical questions to ask about your school:

1. Of your previous 10 **guest speakers** how many of them were women? People of color? Gay?
2. What percentage of your **staff** are people of colour?
3. Of your total discretionary budget what percentage is spent on activities/events/awards on **sports vs arts/culture**?
4. Of the amounts spent on sport what percentage is spent on **rugby and cricket vs other sports like soccer and basketball**?
5. Does your school **offer full colors/honors for all arts/cultural activities** (dance, debating, theatre etc) if not why not?
6. While we commemorate white people who died in battle - their heroism, courage and sacrifice **– do we also commemorate black people who died** - their heroism, courage and sacrifice?
7. Do you have a **diversity policy**? Is it on the website? Is it implemented?
8. What is your **policy on gay students**? Gay staff? Is it documented? Are you living in a don't-ask-don't-tell world or one that celebrates diversity?
9. What are the things that you and your staff **"turn a blind eye"** to? "They're just being boys" = warning bell.
10. What do we currently do that may be offensive or exclusionary to some of our students?
11. How many of our **prefects** do not play in the first team for one of our sports?

(1) How many of our students can authentically succeed against the vision of success our school casts?

(2) Can we recast our vision of success away from a narrow, exclusionary and performance-driven one and towards and more generous one that is collaborative and inclusive and that more people can attain?

(3) Isn't our ultimate goal to ensure the full flourishing of all our boys, irrespective of the form of that flourishing?

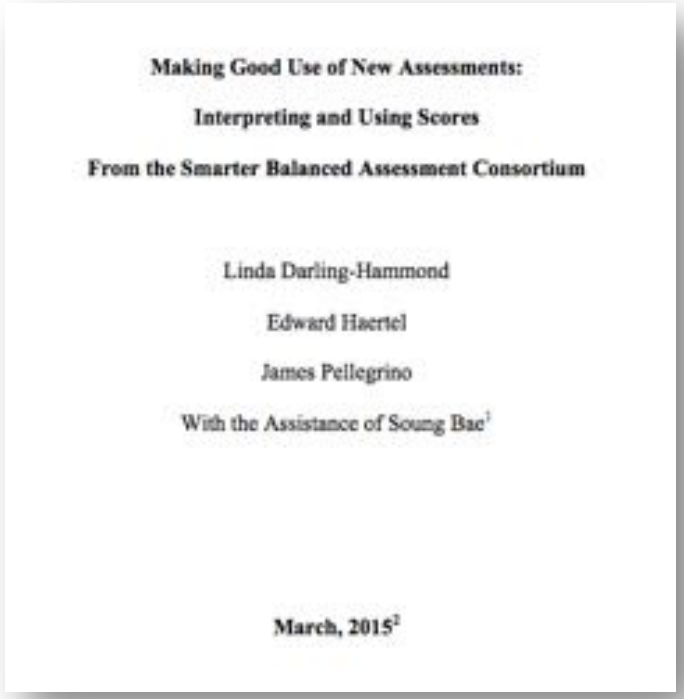

Questions & comments?
Presentation available at nicspaull.com

Resources

https://www.ideo.com/expertise/education/

https://vimeo.com/40895671

http://education.vermont.gov/documents/EDU-WhitePaper-Making_Good_Use-of_New_Assessments.pdf



Making Good Use of New Assessments:

Interpreting and Using Scores

From the Smarter Balanced Assessment Consortium

Linda Darling-Hammond

Edward Haertel

James Pellegrino

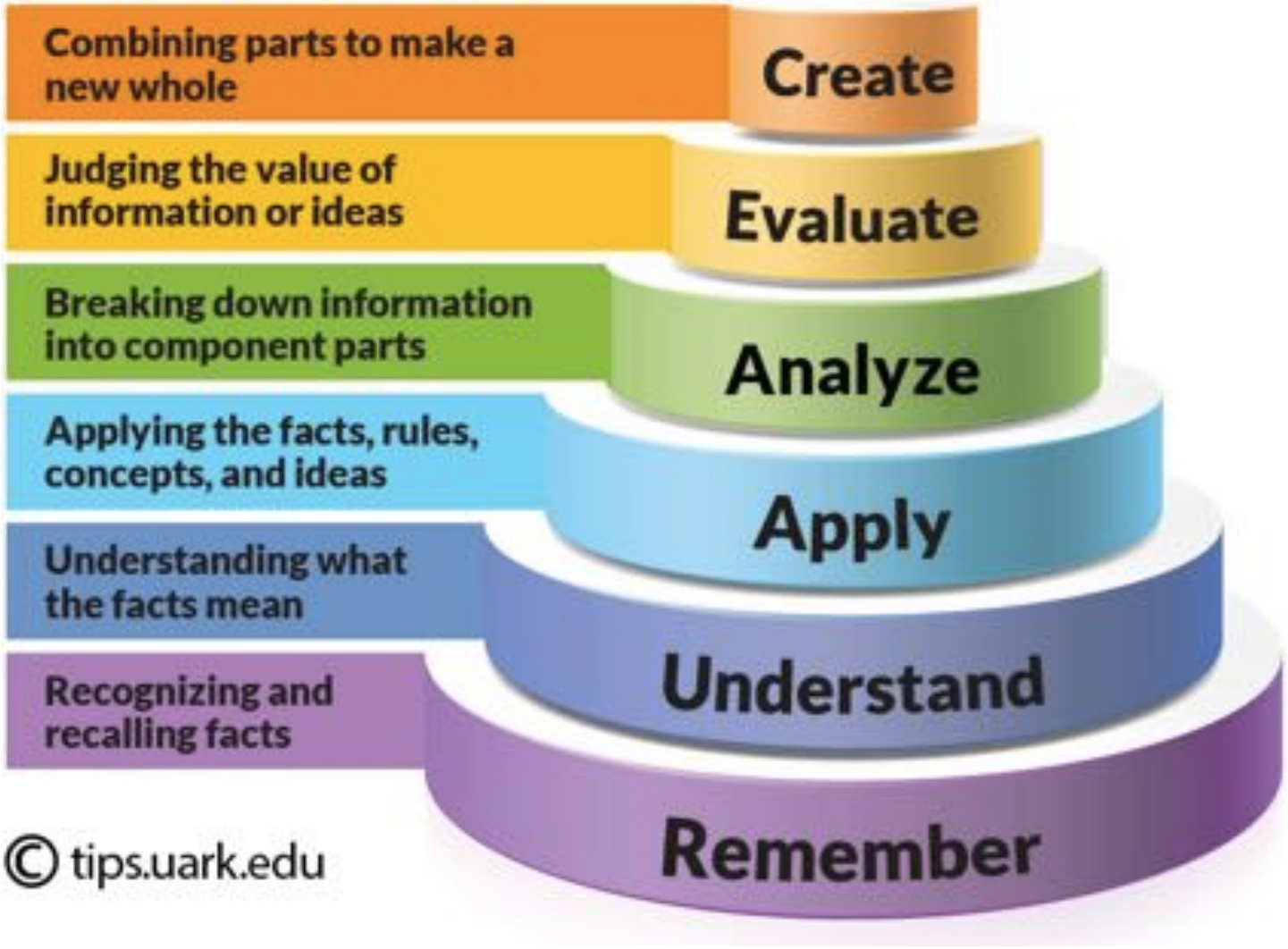
With the Assistance of Soung Bae[1]

March, 2015[2]

Michael Fullan, Ken Robinson, Linda Darling-Hammond, Alaine De Botton, Carnegie Mellon University, d.school at Stanford

Released items - https://www.oecd.org/pisa/pisaproducts/PISA2015-Released-FT-Cognitive-Items.pdf

Bloom's Taxonomy: Cognitive



Expectations for Learning are Changing

The new context means new expectations.

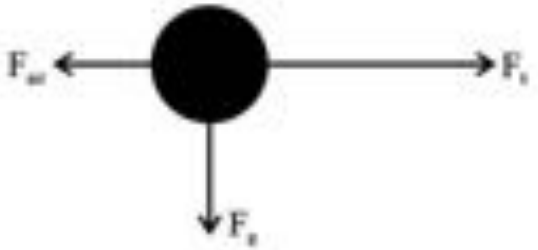
- Ability to communicate
- Adaptability to change
- Ability to work in teams
- Preparedness to solve problems
- Ability to analyse and conceptualise
- Ability to reflect on & improve performance
- Ability to manage oneself
- Ability to create, innovate and criticise
- Ability to engage in learning new things at all times
- Ability to cross specialist borders

Chris Wardlaw, "Mathematics in Hong Kong/China – Improving on Being First in PISA"


KNOWLEDGE
Cite
Count
Define
Draw
Identify
List
Name
Point
Quote
Read
Recite
Record
Repeat
Underline
COMPREHENSION
Associate
Classify
Compare
Compute
Contrast
Differentiate
Discuss
Distinguish
Estimate
Explain
Express
Extrapolate
Interpolate
Locate
Tell
Translate
APPLICATION
Apply
Calculate
Classify
Demonstrate
Determine
Dramatize
Employ
Examine
Illustrate
Interpret
Locate
Operate
Order
Practice
Report
Use
Write
ANALYSIS
Analyze
Appraise
Calculate
Categorize
Classify
Compare
Debate
Diagram
Differentiate
Distinguish
Examine
Experiment
Inspect
Inventory
Question
Separate
Summarize
Test
SYNTHESIS
Arrange
Assemble
Collect
Compose
Construct
Create
Design
Formulate
Integrate
Manage
Organize
Plan
Prepare
Prescribe
Produce
Propose
Specify
Synthesize
Write
EVALUATION
Appraise
Assess
Choose
Compare
Criticize
Determine
Estimate
Evaluate
Grade
Judge
Measure
Rank
Rate
Recommend
Revise
Score
Select
Standardize
Test
Validate
Upper division
Course / Program
outcomes

IEB NSC Physics P1 2015

1.4 A student draws the force diagram below showing the forces acting on a ball **after** it has been thrown. The ball is in mid-flight and is travelling horizontally to the right.



Which force, if any, is incorrect?

A F_{air}, the force due to air resistance
B F_t, the force due to the throw
C F_g, the force due to gravity
D All of the forces are correct

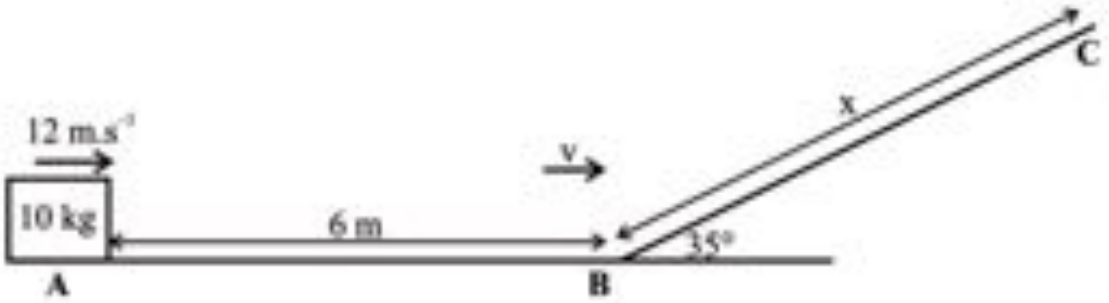
1.5 Car R is travelling towards car P as shown in the diagram. Car R has a greater mass than car P and is moving faster. The two cars collide head on.

Which statement best describes the magnitudes of the forces experienced by the cars during the collision?

A Car R experiences the greater force
B Car P experiences the greater force
C The cars experience equal forces
D It depends on the ratio of the car's masses

QUESTION 5 SLIDING BLOCK

A block of mass 10 kg is sliding along a uniform rough surface. The surface is horizontal from A to B and inclined at 35° to the horizontal from B to C.



The block is travelling at a speed of 12 $m \cdot s^{-1}$ as it passes A.

5.1 Define the term *kinetic energy*. (2)

5.2 Calculate the kinetic energy of the block as it passes A. (3)

The frictional force acting on the block as it slides from A to B is **54,9 N**.

5.3 State the *work-energy theorem*. (2)

5.4 Calculate the speed of the block (v) as it reaches B. (4)

The block slides up the incline from B and comes to rest at C. The frictional force acting on the block as it slides from B to C is **45,0 N**.

5.5 Write an expression for the potential energy of the block at C in terms of x (the distance along the slope from B to C). (2)

5.6 Calculate the distance, x, that the block slides up the slope before coming to rest at C. (5)

Expectations for Learning are Changing

The new context means new expectations. Most studies include:

- Ability to communicate
- Adaptability to change
- Ability to work in teams
- Preparedness to solve problems
- Ability to analyse and conceptualise
- Ability to reflect on and improve performance
- Ability to manage oneself
- Ability to create, innovate and criticise
- Ability to engage in learning new things at all times
- Ability to cross specialist borders

Queensland Australia Gr9 Maths - Instruction to Students:

Your task is to design a space to store enough stackable chairs to [illegible] in your school.

Note: We are still testing the content and whether students have mastered the underlying skills

- **You will:**
- follow a series of steps to help you design a suitable space
- use a research journal to record your ideas and rough working
- write a report on the process and solutions.

Questions

- 1. Develop mathematical models for each dimension of a stack [illegible] is unknown.
- 2. To help you think about the practicalities of storing chairs, use your mathematical models to find:
- a. the greatest number of chairs in one stack that can fit into a storage area with a 4 m high ceiling
- b. the number of stacks that fit across a 3.2 m wide area if there are 10 chairs in each stack
- c. the height of a stack, if all the chairs for the school are put into one stack.
- 3. Use the understanding of the practicalities of storing chairs you developed in Question 2 to find a practical storage area for the chairs.
- To answer these questions, work through the steps set out on the following pages. As you work, record everything you do in your research journal.

Using a research journal

- A research journal is a record of what you and your group do. Your research journal should include:
- what you and your group do in each class session, ideas, questions, plans, difficulties faced, how difficulties are managed, data collected, calculations, mathematical language, acknowledgment of any help you receive from friends, teachers or other people.
- Your research journal should contain all the information you need to write your report. It will also help your teacher decide what you can do by yourself, and what you can do as part of a group.

Communicating your Findings

- Write a report on your investigation. Your report should include:
- (1) an introduction providing an overview of the scenario and the questions, (2) your solutions to the questions, (3) using mathematical language, data, calculations, diagrams, graphs and phrases or sentences that provide enough information for a person to know what you are calculating without having to read the questions, (4) a conclusion, summarising: your reflection on the practicalities of your solutions, any assumptions made or limitations to your answers, and suggestions for improving the investigation or strategies used.

Bloom's 3 psychological domains

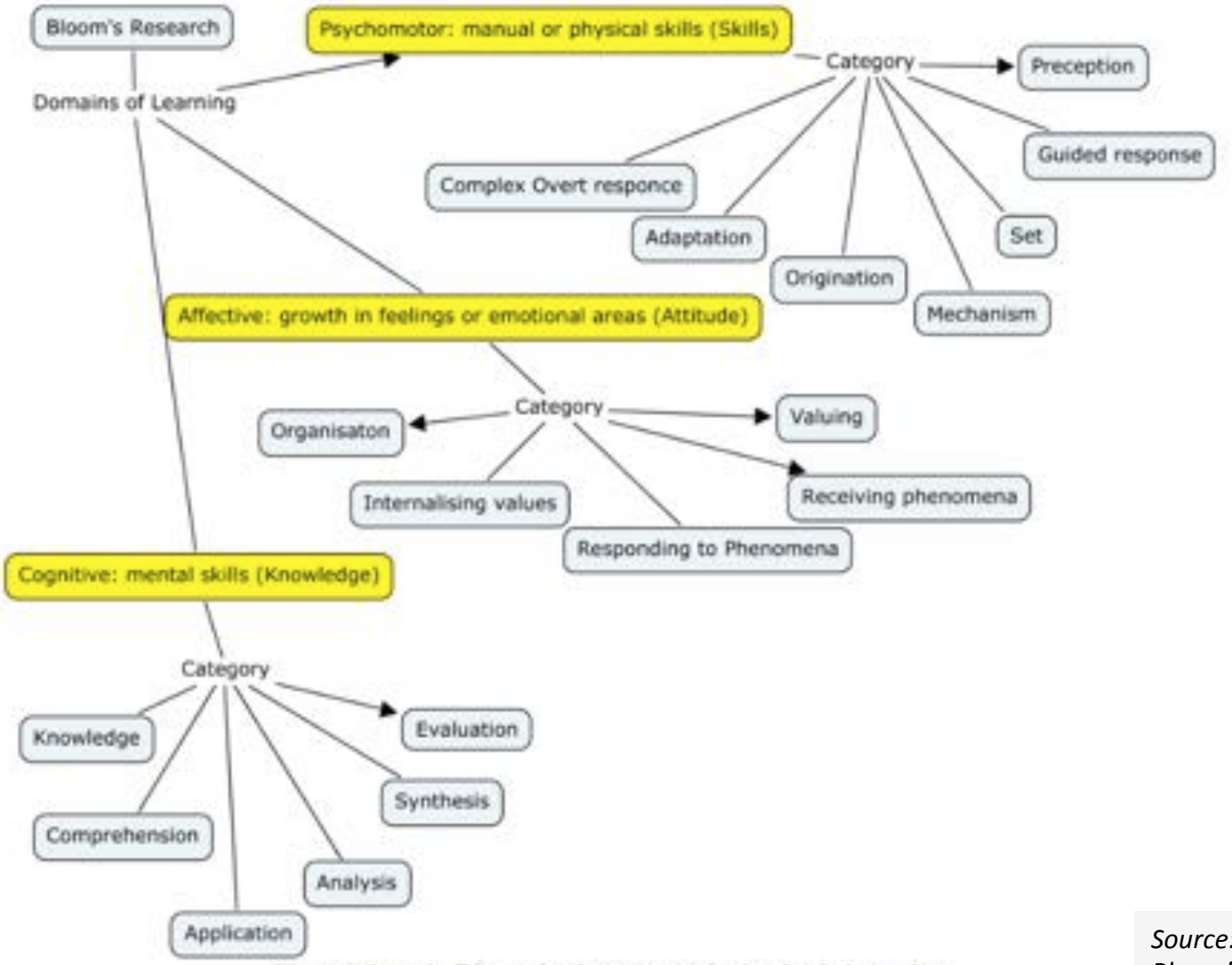


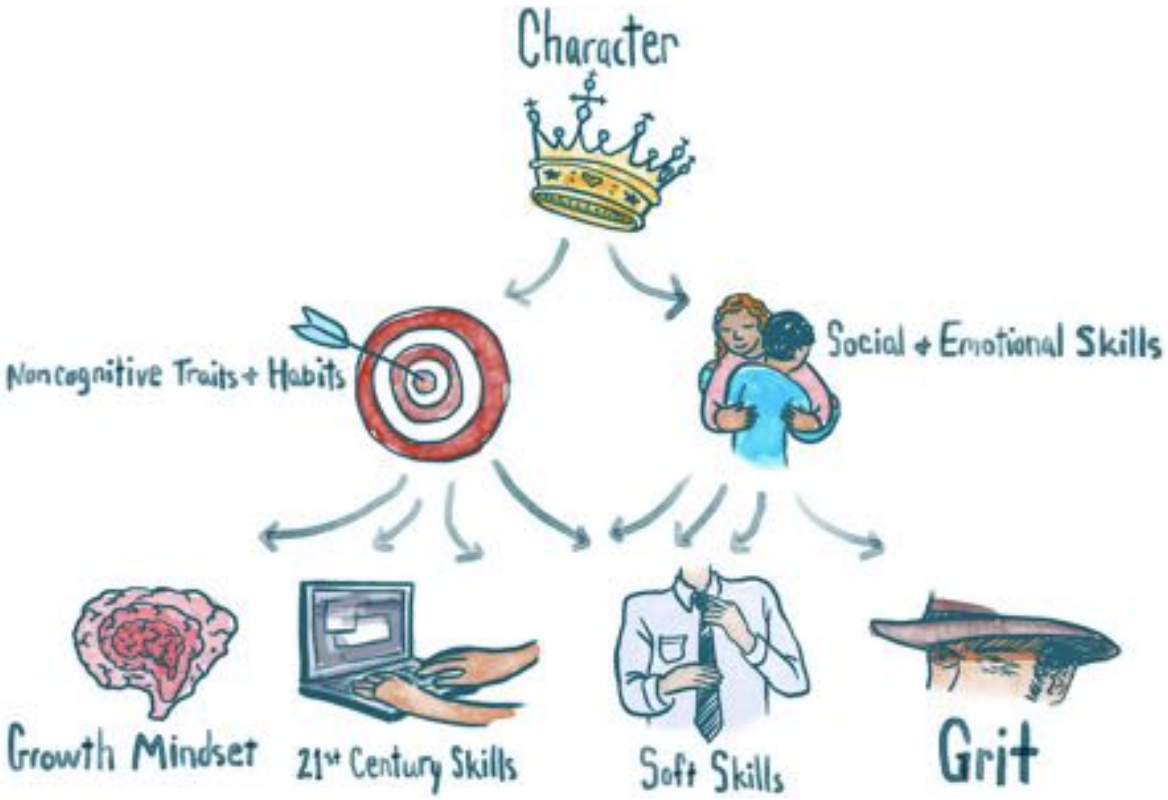
Illustration 1: Bloom's three psychological domains

Source: Andrew Churches – Bloom's Digital Taxonomy

"Each team consists of four to six teachers and is responsible for 60 to 75 pupils. As an example of how they work, students in the eighth grade (13-year-olds) will often study earthquakes, volcanos and other earth forces - normally considered part of a geography or natural science lesson.

Now, however, teachers will come up with several different storylines for the lesson - encompassing other subjects In one, they pretend they have to climb Mount Everest.

It includes the study of maps, weather and climate, make a list of the equipment they need, calculate the time they will need, make a budget for the trip and apply for funding in English (a foreign language)."


Character
Noncognitive Traits + Habits
Social + Emotional Skills
Growth Mindset
21st Century Skills
Soft Skills
Grit

- Angela Duckworth – U Penn
- Carol Dweck - Stanford

Esther Wojcicki – Palo Alto High School's journalism program

<u>Student newspaper, website, magazine, videos etc.</u>

- Videography
- Photography
- Deadlines
- Collaboration
- Inter-personal relations management
- Design
- Planning
- Writing
- Editing
- Project-management
- Printing
- Budgeting
- Formatting

Students are judged by more complex outputs over a longer period of time.