Towards a strategic integration of digital technologies into classrooms

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THANK YOU…

- for inviting me to Malta,
- for giving me the chance to share some of my expertise with you,
- for offering me the opportunity to discuss your project on “Game based learning for early school leavers” with you,
- for sharing your thoughts on the integration of ICT into education.

ABOUT ME

- Ph.D. in Psychology & Education
- University of Luxembourg:
  founded in 2003
  moved to a new campus in 2015
- Senior Lecturer: Educational Technology, Educational Research, Learning Sciences
- Vice-Head of the Institute of Applied Educational Sciences
- Research on “Current Educational Technology Policies, Strategies, Theories & Practices in Luxembourg”

LUXEMBOURG

Area	
• Total	2,586.4 km² (168th) 998 sq mi
• Water (%)	0.60%
Population	
• April 2015 estimate	562,958[1] (170th)
• 2001 census	439,539
• Density	194.1/km² (60th) 501.3/sq mi
GDP (PPP)	2016 estimate
• Total	$58.234 billion[2] (94th)
• Per capita	$100,991[2] (2nd)
GDP (nominal)	2016 estimate
• Total	$60.176 billion[2] (71st)
• Per capita	$104,359[2] (3rd)

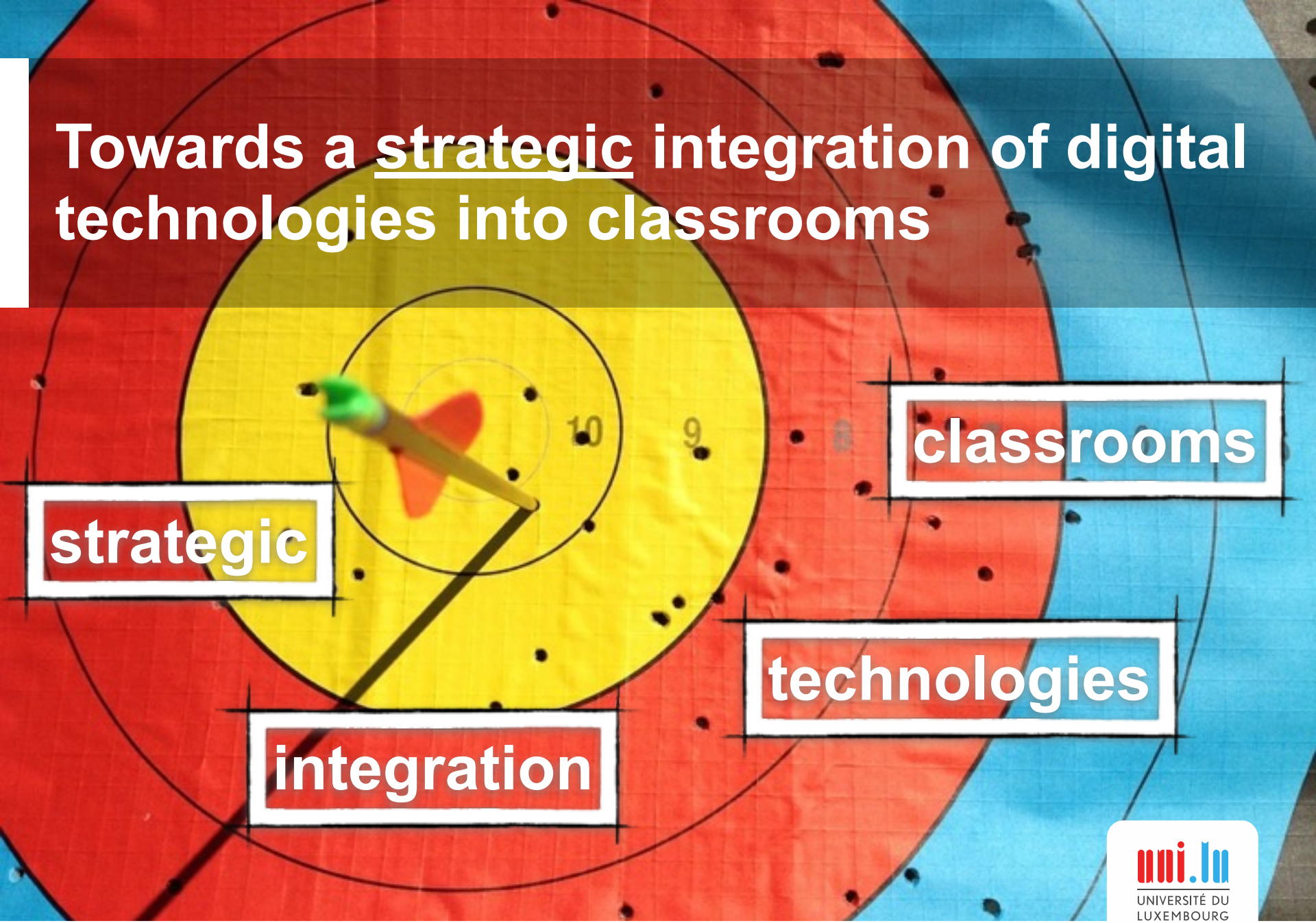
https://en.wikipedia.org/wiki/Luxembourg

MALTA

Area	
• Total	316 km² (207th) 122 sq mi
• Water (%)	0.001
Population	
• 2014 estimate	445,426[3] (171st)
• 2011 census	416,055[2]
• Density	1410[2]/km² (7th) 4,077/sq mi
GDP (PPP)	2014 estimate
• Total	$14.129 billion[4]
• Per capita	$33,215[4]
GDP (nominal)	2014 estimate
• Total	$10.582 billion[4]
• Per capita	$24,876[4]

https://en.wikipedia.org/wiki/Malta

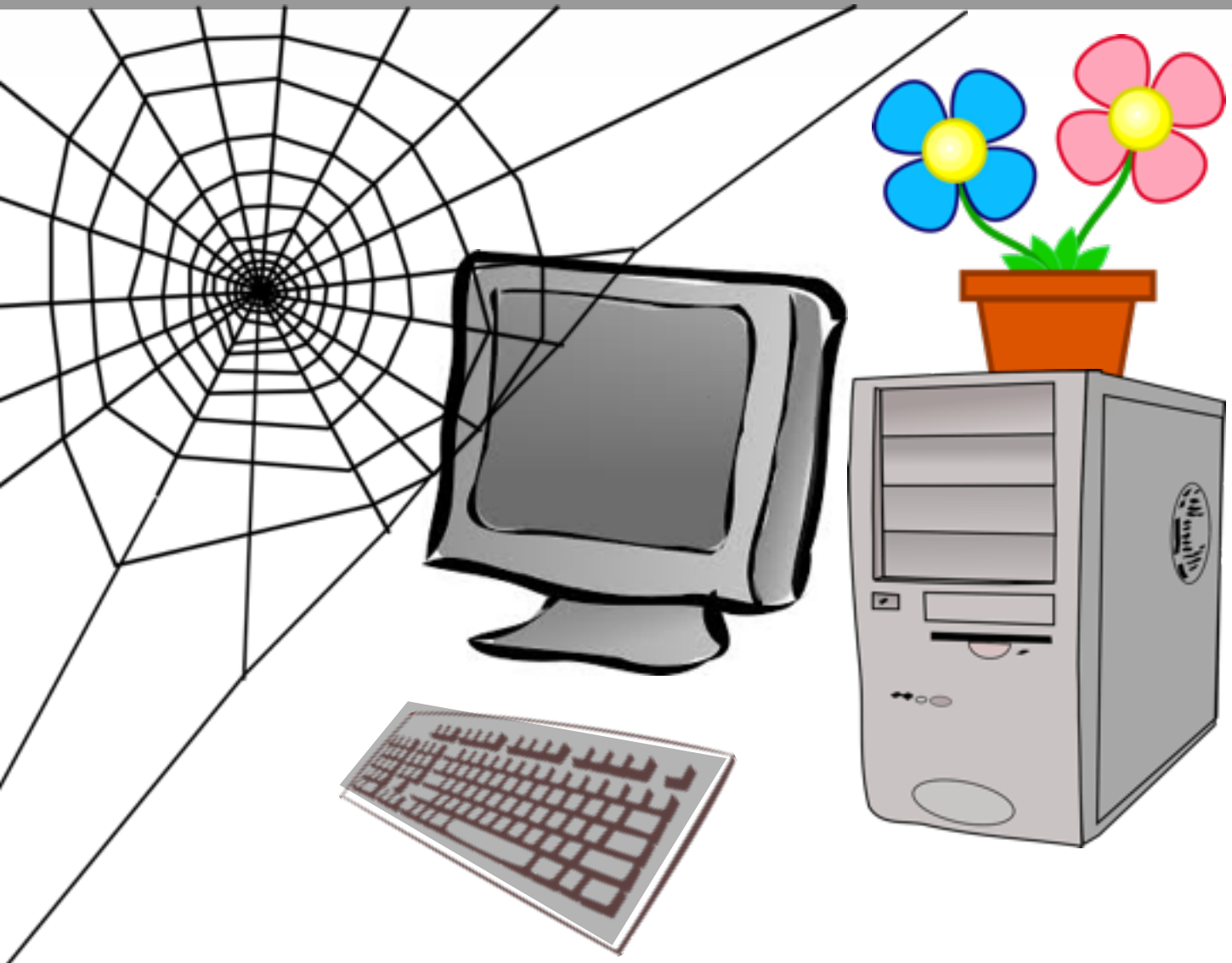
Towards a strategic integration of digital technologies into classrooms



AVOIDING THE SUB-OPTIMAL USE…

AVOIDING THE SUB-OPTIMAL USE…

AND THE NON-USE…



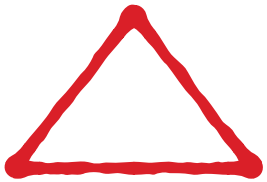
STRATEGIC

- Filling a real gap between current state and wished for future state
- Based on a realistic analysis of the current state
- Addressing an identified problem / issue
- Oriented towards clear targets
- In line with a chosen vision
- Goal-oriented
- Leading to a plan-of-action
- Well planned, not random
- Beyond mere wishful thinking
- Practically sound & realistic
- Effective in reaching a target
- Theoretically founded
- Daring, audacious & a bit foolish

MODELING THE PROCESS

- NEEDS / CHALLENGES / ISSUES / PROBLEMS
- EXISTING SOLUTIONS
- CONCEPTION OF A NEW SOLUTION (“on paper”)

OBJECTIVES



ASSESSMENTS METHODS

- DESIGN & IMPLEMENTATION (“in the classroom”)
- DOCUMENTATION
- EVALUATION & REGULATION

Adapted from:
Formation pédagogique LabSET - ULG

START WITH THE PROBLEM

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- ANALYSE YOUR CURRENT NEEDS
- DEFINE THE CHALLENGES YOU WANT TO ADDRESS
- WHAT ISSUES ARE YOU STRUGGLING WITH?
- WHY DOES THE IDENTIFIED PROBLEM EXIST?
- IS THE IDENTIFIED PROBLEM WORTH SOLVING?
- HOW URGENT IS IT TO SOLVE IT?
- WHAT (PLEASANT AND UNPLEASANT) SIDE-EFFECTS OF SOLVING THIS PROBLEM DO YOU EXPECT?

ANALYSE THE EXISTING ECOSYSTEM

- TRY TO UNDERSTAND CURRENT PRACTICES
  - AND THEIR HISTORY
- CONSIDER THE LARGER “ECOSYSTEM” CONTEXT, LOOK BEYOND THE INDIVIDUAL CLASSROOM, SCHOOL,…
- WHO ELSE WANTS THIS ISSUE TO ADDRESSED?
- DO OTHER STAKEHOLDERS SHARE YOUR ANALYSIS?
- WHO WOULD BENEFIT FROM A SOLUTION?
- WHO WOULD SUFFER IF THE PROBLEM IS SOLVED?

SEARCH FOR EXISTING SOLUTIONS

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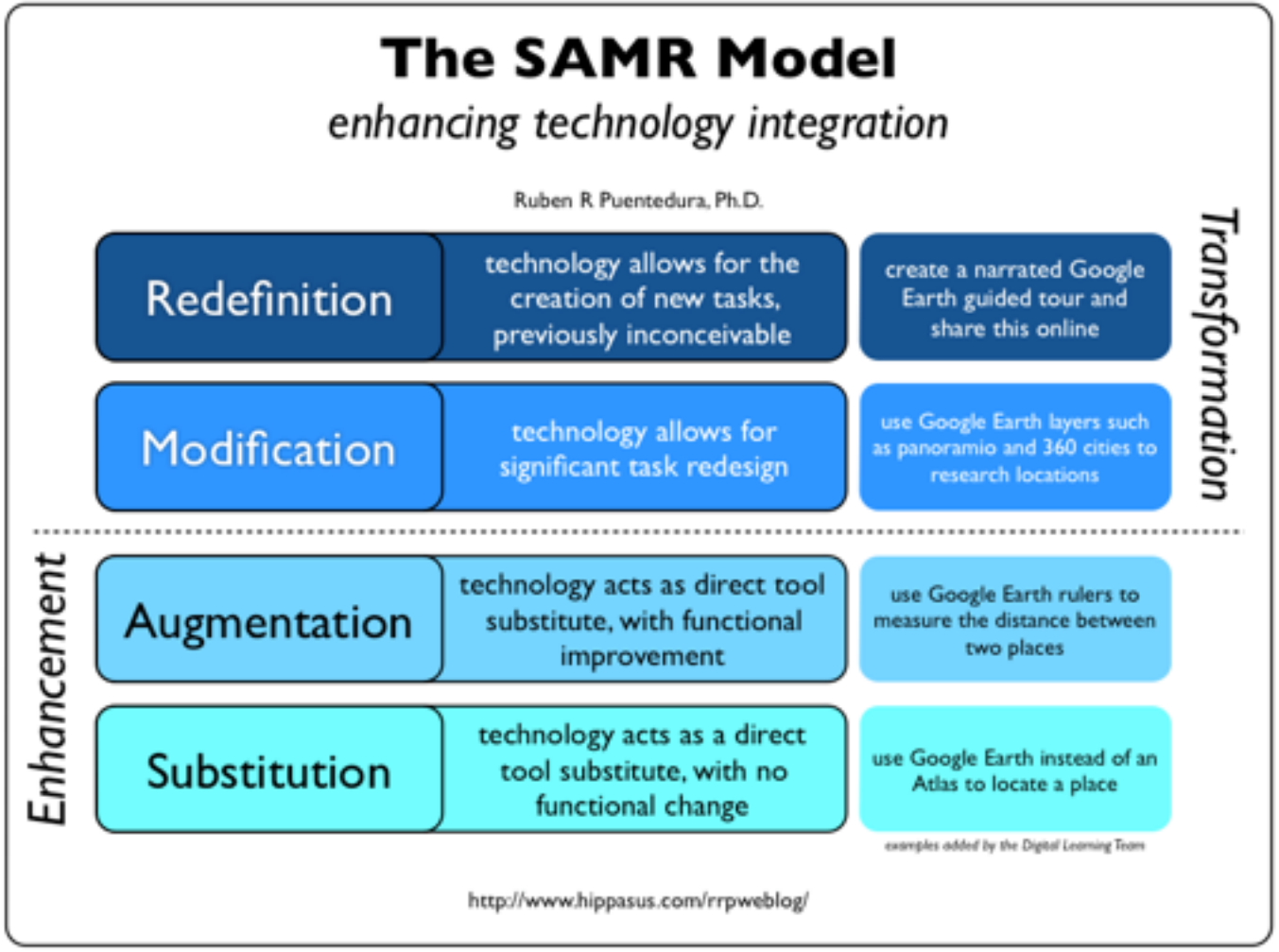
- ANALYSE EXISTING SOLUTIONS TO YOUR PROBLEM OR TO SIMILAR PROBLEMS
- TRY TO LOOK BEYOND SPECIFIC TOOLS & MEDIA, CONSIDER THE UNDERLYING PEDAGOGICAL METHODS & MODELS
- ANALYSE IF EXISTING SOLUTIONS COULD FIT INTO YOUR "EDUCATIONAL ECOSYSTEM", IN TERMS OF SOCIO-CULTURAL AND MATERIAL CHARACTERISTICS
- WHAT ARE THE ADVANTAGES & DISADVANTAGES?
- HOW EASY / CHEAP ARE THESE SOLUTIONS TO IMPLEMENT?
- ADAPT TO YOUR CONTEXT, DON'T JUST SIMPLY COPY!

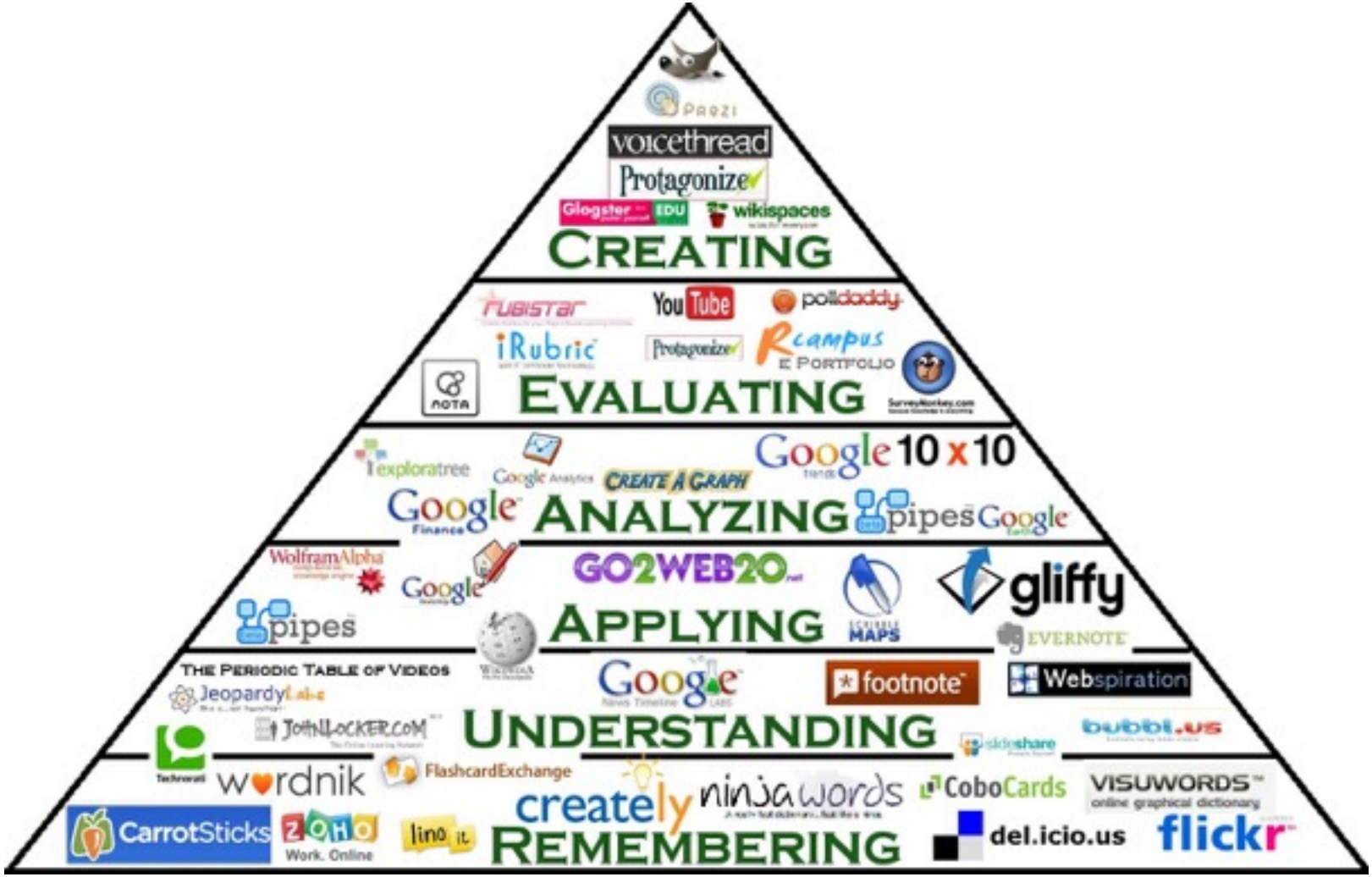
CONCEPTUALIZING A NEW SOLUTION

- DRAFT AN ORIGINAL, INNOVATIVE SOLUTION
  - SPECIFIC ADDED VALUE? SAMR MODEL ANALYSIS (PUENTEDURA, 2013)
- ADAPTED TO YOUR SPECIFIC NEEDS AND YOUR CONTEXT
  - EDUCATIONAL OBJECTIVES (ANDERSON & KRATHWOHL, 2001)
  - EDUCATIONAL METHODS & TOOLS (LECLERCQ & POUMAY, 2005)
  - EDUCATIONAL ASSESSMENTS (PROCESSES — OUTCOMES)
  - TRIPLE CONSISTENCY TEST
- FOUNDATIONS ARE IMPORTANT
  - LEARNING THEORIES: HOW PEOPLE LEARN
  - TEACHING MODELS: HOW WE CAN TEACH

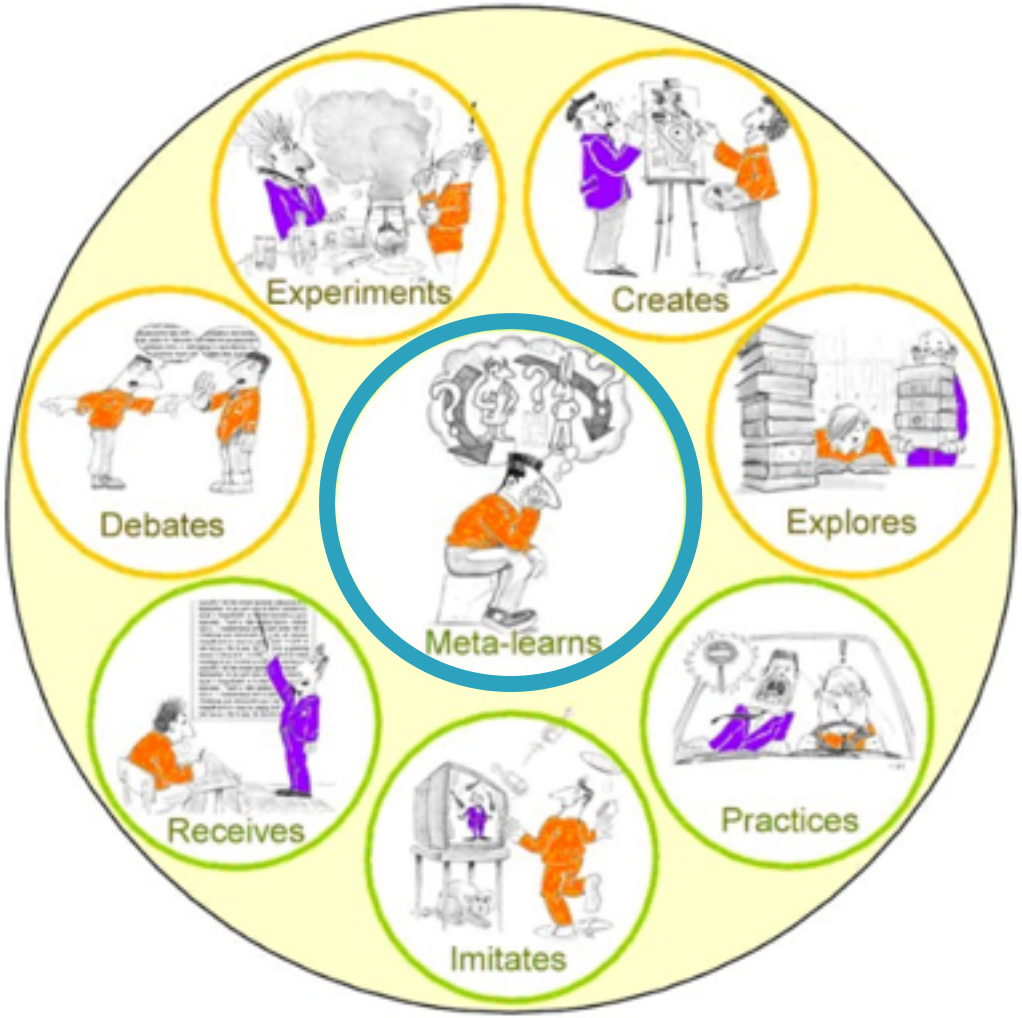
SAMR MODEL


The SAMR Model
enhancing technology integration
Ruben R Puentedura, Ph.D.
Redefinition
technology allows for the creation of new tasks, previously inconceivable
create a narrated Google Earth guided tour and share this online
Modification
technology allows for significant task redesign
use Google Earth layers such as panoramio and 360 cities to research locations
Augmentation
technology acts as direct tool substitute, with functional improvement
use Google Earth rulers to measure the distance between two places
Substitution
technology acts as a direct tool substitute, with no functional change
use Google Earth instead of an Atlas to locate a place
examples added by the Digital Learning Team
Transformation
Enhancement
http://www.hippasus.com/rrpweblog/

DIGITAL BLOOM TAXONOMY



LECLERCQ & POUMAY (2005)



- Receives information & task
- Explores sources
- Creates report
- Debates with co-students
- Practices presentation
- Reflects on process

DESIGN & IMPLEMENTATION

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- DESIGN THE SOLUTION
  - BUILD NEW TOOLS, IF NECESSARY
  - RE-USE, RE-COMBINE EXISTING TOOLS, IF POSSIBLE
  - DESCRIBE IT FOR OUTSIDERS
- IMPLEMENT THE SOLUTION
  - TEST IT BEFORE DEPLOYING IT LARGE SCALE
  - PROVIDE (in advance) TRAINING FOR TEACHERS
  - IMPLEMENT THE SCENARIO & THE TOOLS
  - ENSURE ESSENTIAL CONDITIONS ARE FULFILLED (ISTE)

ESSENTIAL CONDITIONS

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Shared Vision
Proactive leadership in developing a shared vision for educational technology among all education stakeholders, including teachers and support staff, school and district administrators, teacher educators, students, parents, and the community

Empowered Leaders
Stakeholders at every level empowered to be leaders in effecting change

Implementation Planning
A systemic plan aligned with a shared vision for school effectiveness and student learning through the infusion of information and communication technology (ICT) and digital learning resources

Consistent and Adequate Funding
Ongoing funding to support technology infrastructure, personnel, digital resources, and staff development

Equitable Access
Robust and reliable access to current and emerging technologies and digital resources, with connectivity for all students, teachers, staff, and school leaders

Skilled Personnel
Educators, support staff, and other leaders skilled in the selection and effective use of appropriate ICT resources

Ongoing Professional Learning
Technology-related professional learning plans and opportunities with dedicated time to practice and share ideas

Technical Support
Consistent and reliable assistance for maintaining, renewing, and using ICT and digital learning resources

Curriculum Framework
Content standards and related digital curriculum resources that are aligned with and support digital age learning and work

Student-Centered Learning
Planning, teaching, and assessment centered around the needs and abilities of students

Assessment and Evaluation
Continuous assessment of teaching, learning, and leadership, and evaluation of the use of ICT and digital resources

Engaged Communities
Partnerships and collaboration within communities to support and fund the use of ICT and digital learning resources

Support Policies
Policies, financial plans, accountability measures, and incentive structures to support the use of ICT and other digital resources for learning and in district school operations

Supportive External Context
Policies and initiatives at the national, regional, and local levels to support schools and teacher preparation programs in the effective implementation of technology for achieving curriculum and learning technology (ICT) standards

iste.org/nets

DOCUMENTATION

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- TRY TO DOCUMENT AS MUCH AS POSSIBLE HOW THE NEW SOLUTION WAS IMPLEMENTED IN CLASSROOMS
- MAKE LEARNING VISIBLE: PROCESSES & OUTCOMES
- GIVE STUDENTS A VOICE
- ALLOW TEACHERS TO REFLECT ON THEIR NEW PRACTICES
- ASK OTHER STAKEHOLDERS
- INCLUDE QUANTITATIVE AND QUALITATIVE DATA
- TEST THE HYPOTHESIS! STAY SKEPTICAL!
- IF POSSIBLE, CONSIDER COMPARING WITH A CONTROL GROUP

EVALUATION & REGULATION

- EVALUATE IN HOW FAR YOUR EDUCATIONAL SCENARIO HAS REACHED THE GOALS YOU HAD DEFINED
- USER SATISFACTION // STAKEHOLDERS SATISFACTION
- COSTS AND SIDE-EFFECTS
- ADDED-VALUE: ENHANCEMENT / TRANSFORMATION (SAMR ANALYSIS)
- CHANGES TO BE MADE
- RE-DESIGN NEW VERSION
- TEST NEW VERSION(S)

EVALUATION & REGULATION

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- CHANGES TO BE MADE
- RE-DESIGN NEW VERSION
- TEST NEW VERSION(S)
- THINK ABOUT ALPHA, BETA & GAMMA PHASES


THANK YOU FOR YOUR ATTENTION!
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REFERENCES

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- http://www.iste.org/standards/essential-conditions
- http://www.labset.net/media/prod/8LEM.pdf