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Ινστιτούτο Πληροφορικής και Τηλεπικοινωνιών
Net Media Lab - Mind & Brain R&D

#GIL4W

Διαδικτυακή Ημερίδα
“THE SCHOOL OF THE FUTURE”

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I.I.T. -N C S R “Demokritos”

http://imm.iit.demokritos.gr/

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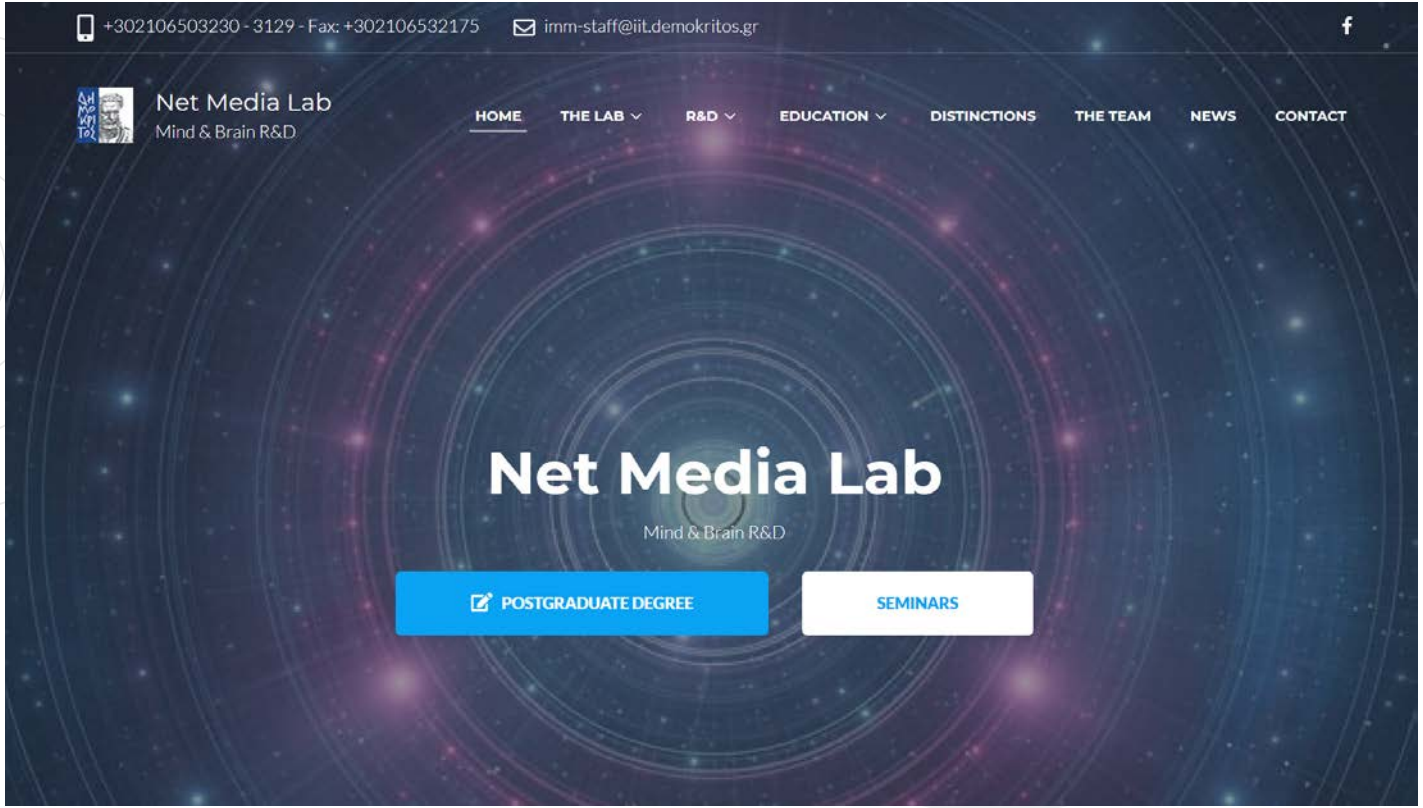
12 OCTOBER 2022

Iceland Liechtenstein Norway grants
Norway grants



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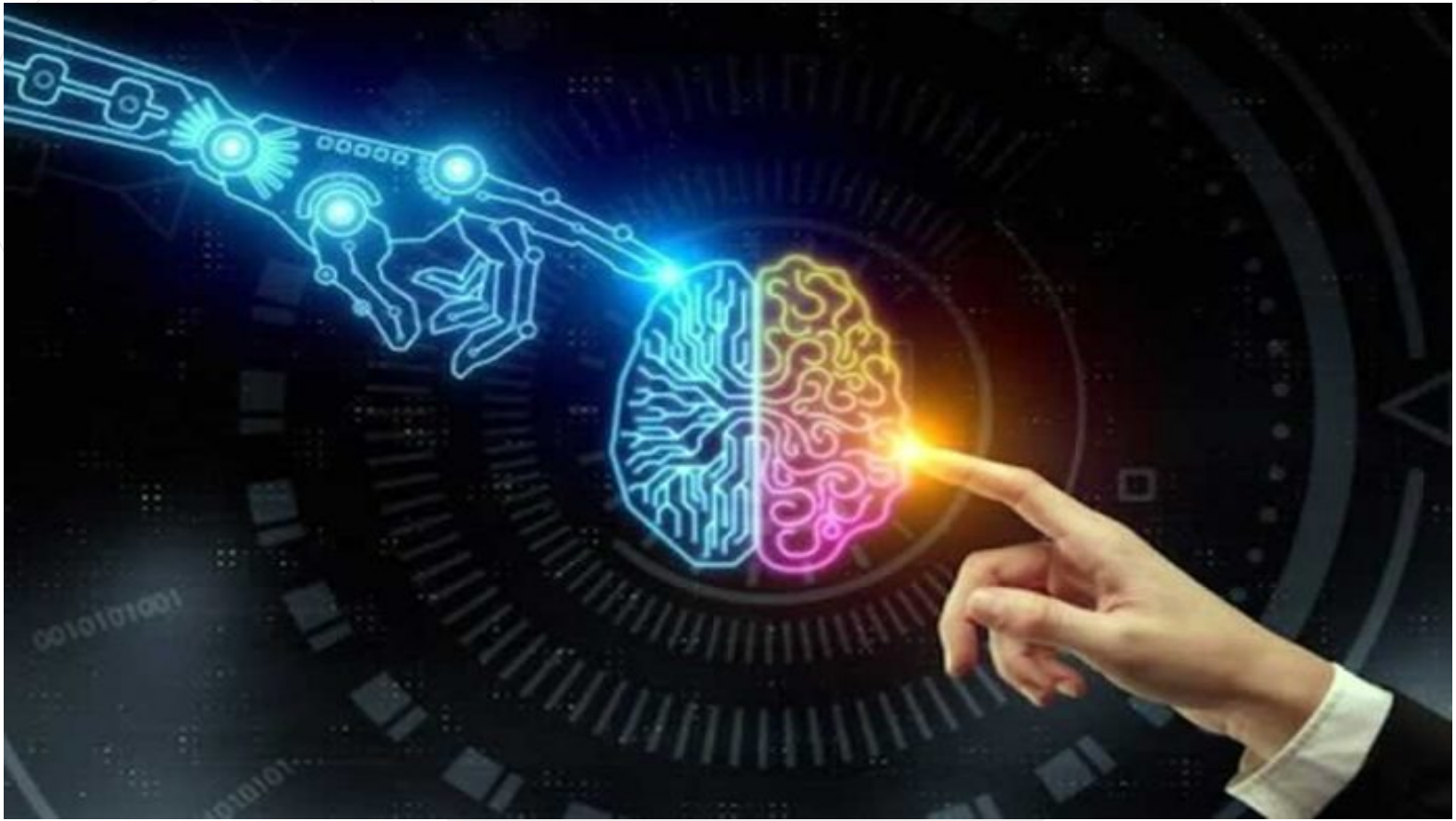
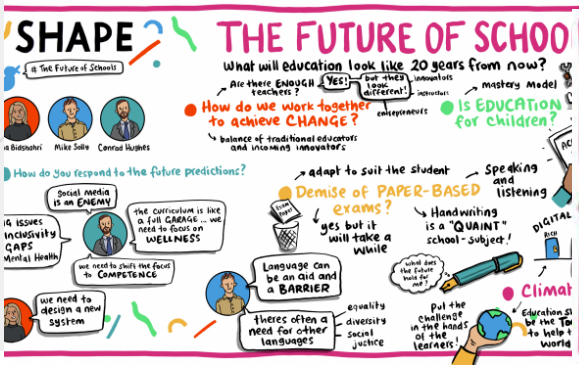
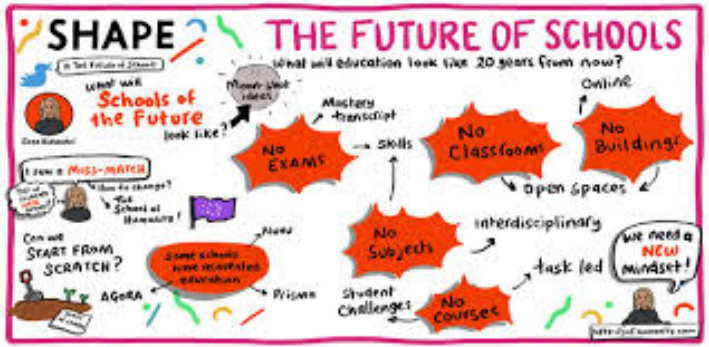
ΤΕΧΝΟΛΟΓΙΕΣ, ΠΕΡΙΕΧΟΜΕΝΟ, ΔΙΑΔΙΚΑΣΙΕΣ, ΠΡΟΤΕΡΑΙΟΤΗΤΕΣ







The Seven Gears of the Future Ready Framework:

- Curriculum, Instruction, and Assessment
- Personalized Professional Learning
- Technology and Infrastructure
- Data and Privacy
- Community Partnerships
- Budget and Resources
- Use of Space and Time

02

Machine Learning (ML)

Machine learning is a kind of data analysis that automates the creation of analytical models.It is a field of AI based on the premise that computers can learn from data, recognize patterns, and make judgments with little or no human input

03

Robotic Process Automation

This technology enables anyone to build computer software, or a robot to mimic and incorporate human activities while interacting with digital systems in order to create business processes.

04

Data Science

Data Science is the automation that aids in the simplification of complex data

05

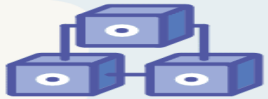
DevOps

DevOps is a methodology that brings together software development and IT operations.

06

Blockchain

Blockchain is the most advanced and cutting-edge technology when addressing electronic records in the year 2021. In simpler terms, a Blockchain is an electronic record that may be shared among several users.



07

Edge Computing

At the end of the week, the teacher has to send the study materials to the students for them to study at home also for project reference.

08

Virtual Reality

This cutting-edge technology creates sounds, lifelike visuals, and other emotions that transport you to a fantastical realm. Virtual reality is a technology that allows one to immerse in an environment that appears to be incredibly real.

https://www.boardinfinity.com/blog/top-10-trending-technologies/

EMERGING TECHNOLOGIES

CompTIA's Emerging Technology Community selected the top 10 technologies that have near-term business and financial opportunity for the IT channel and those working in the business of technology.

1 Internet of Things

IoT is driving change and impacting efficiencies in businesses around the world by providing the data needed to improve marketing, increase sales and decrease costs.

2 Artificial Intelligence

AI is significantly impacting the way customers interact with businesses through the advent of intelligent bots and websites and is becoming increasingly commoditized, accessible and integrated with everyday tools.

3 5G

5G is increasing our ability to move, manipulate and analyze data across wireless platforms. It will continue to drive the development of more complex apps to solve problems and increase growth across a wide array of industries.

4 Serverless Computing

Serverless computing is enabling organizations to create a NoOps IT environment that is automated and abstracted from underlying infrastructure, reducing operational costs and allowing businesses to invest in the development of new, impactful, value-add capabilities.

5 Blockchain

Blockchain is solving the increased need to secure and manage an increasing number of transactions across the Internet as it provides an alternative to centrally managed record keeping.

6 Robotics

Robotics is automating routine processes by leveraging machines in all shapes and sizes to make businesses faster, cheaper and more efficient. This is driving conversations and opportunities due to its incredibly fast ROI and significant opportunity for cost savings and growth.

7 Biometrics

Leveraging biometric technology from facial recognition to retina and fingerprint scans will become the mainstream methodology for confirming your identity. These solutions, both stand alone and integrated, will form the secure foundation for solutions that we deliver moving forward.

8 3D Printing

3D printing is providing an effective solution for low volume manufacturing of complex parts and quick and local production of obscure products. The opportunity for the industry is expected to become bigger as more affordable products become available and will help to expand the market.

9 VR/AR

VR/AR is transforming the way we engage with machines, data and each other. Organizations are exploring opportunities to use VR, AR, mixed reality, AI and sensor technologies to enhance operational efficiency and individual productivity.

10 Drones

Drones are enabling robotic automation without geographic restriction and the opportunities for technological development and integration are high for the market.

Learn more at CompTIA.org/EMTechCommunity.


21st-century worker
Leadership
Take a cross-disciplinary approach to project teamwork. Participate in leading and following in order to prepare for your career.
Many businesses are adopting a participative management style, which involves employees in decision making.
George DeMetropolis
University of Phoenix faculty member and leadership consultant
Collaboration
Choose courses that are collaborative and measure success by team results.
Adaptability
Take advantage of flexible course schedules and learning platforms in order to work, raise a family, volunteer and learn.
Innovation
Seek out learning environments that build technology and media fluency.
Global citizenship
Learn in a diverse classroom to gain opportunities to build cross-cultural understanding.
Critical thinking
Take coursework that offers an opportunity to engage in self-directed, project-based and applied learning.
Communication
Learn in an environment that requires participation in many modes of communication.
Students must hold themselves accountable and have the opportunity to hold others accountable for the good of the team.
Irene Blundell
University of Phoenix faculty member
Productivity and accountability
Select a school that provides a code of conduct in learning situations to build accountability and productivity.
Accessing, analyzing and synthesizing information
Seek out a market-driven curriculum focused on real cross-functional issues to help you think about how issues interconnect.
Entrepreneurialism
Work on developing the ability to solve current and relevant issues in the safety of the classroom environment.
University of Phoenix
Designer: Naureen Saira | Writer: Mary Barry

Claudine Habak, Mohamed L. Seghier, Mohamed A. Fahim, Scott Parkman

Emirates College for Advanced Education

1

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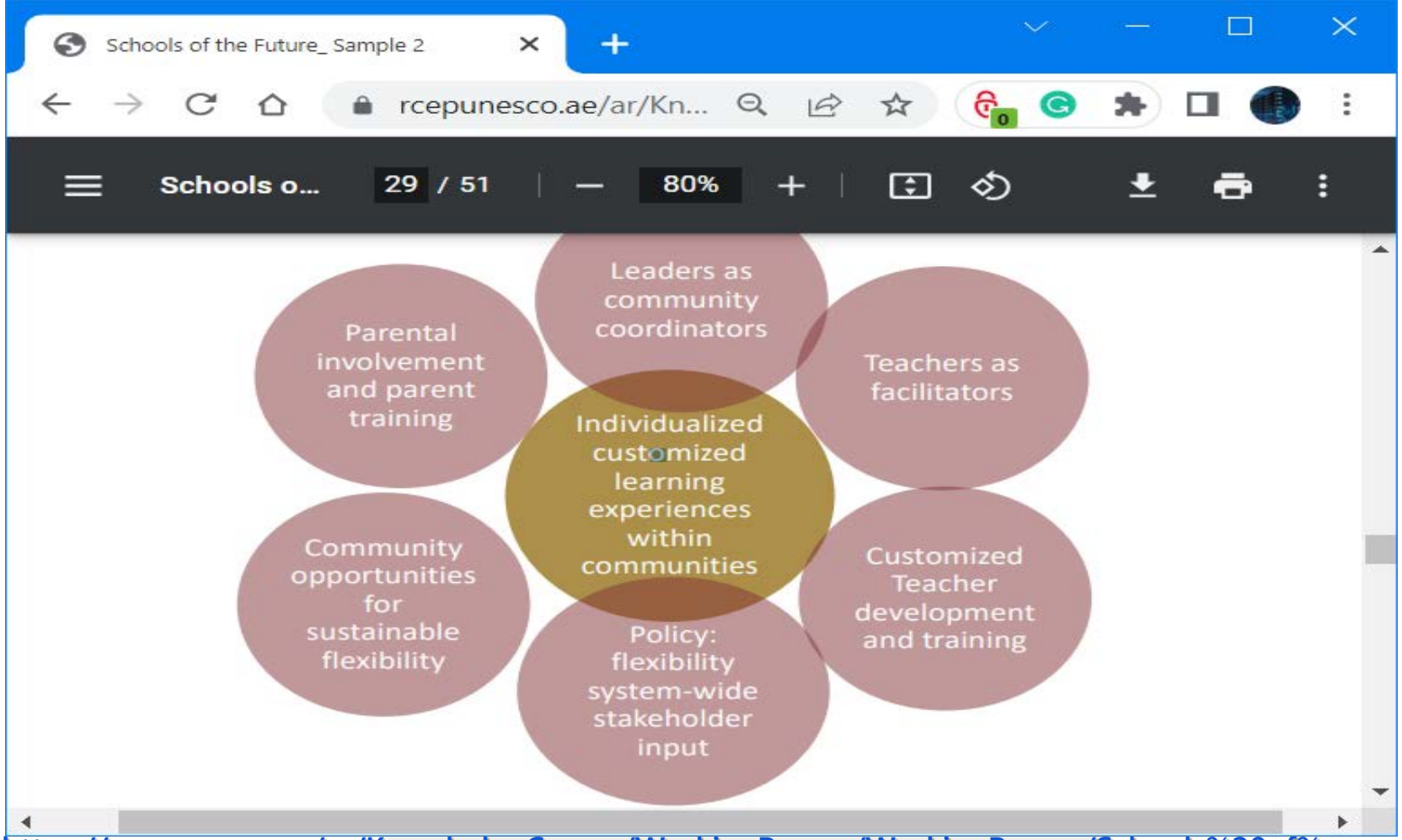

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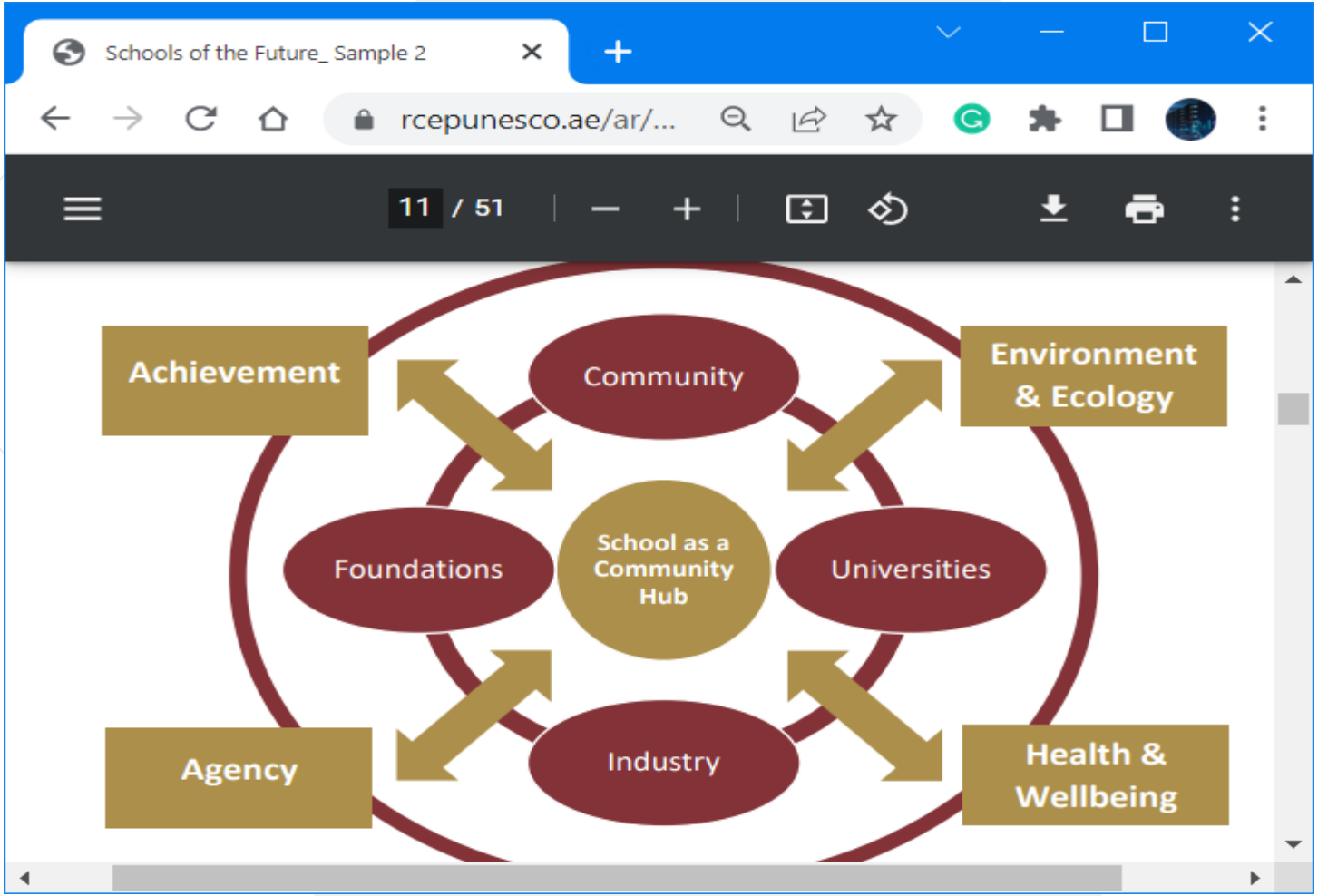

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Schools of the Future_ Sample 2

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a sustainable society.

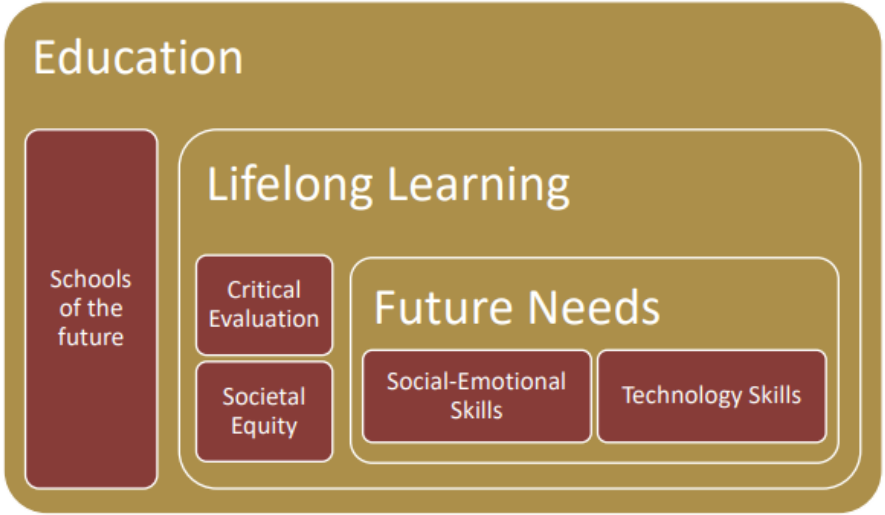

Figure 1. The role of education in promoting lifelong learning by developing critical evaluation, which can support societal cohesion. Combining this with social-emotional skills and technology skills creates adaptability to be able to respond to the needs of the future.

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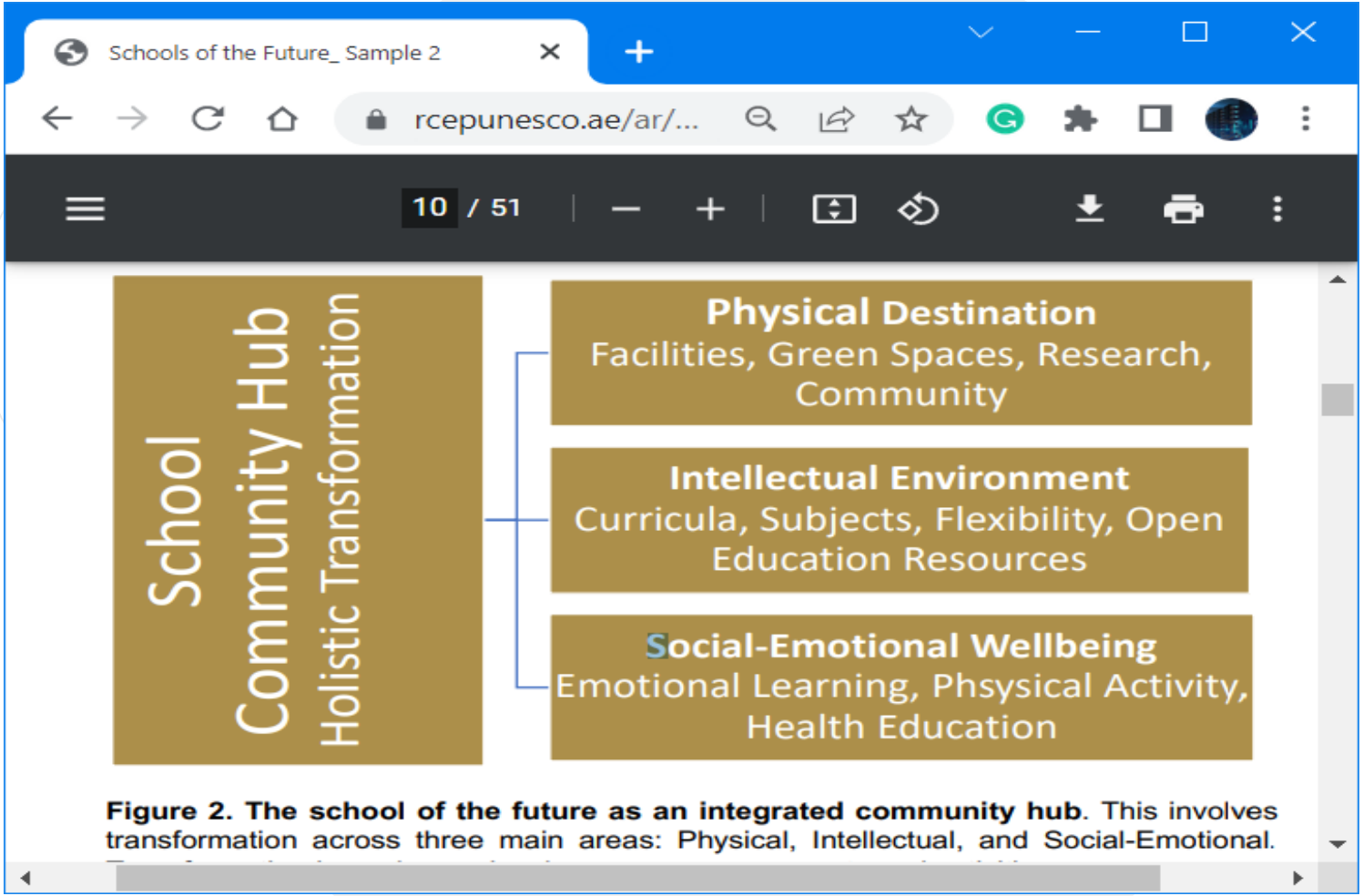

Figure 2. The school of the future as an integrated community hub. This involves transformation across three main areas: Physical, Intellectual, and Social-Emotional.

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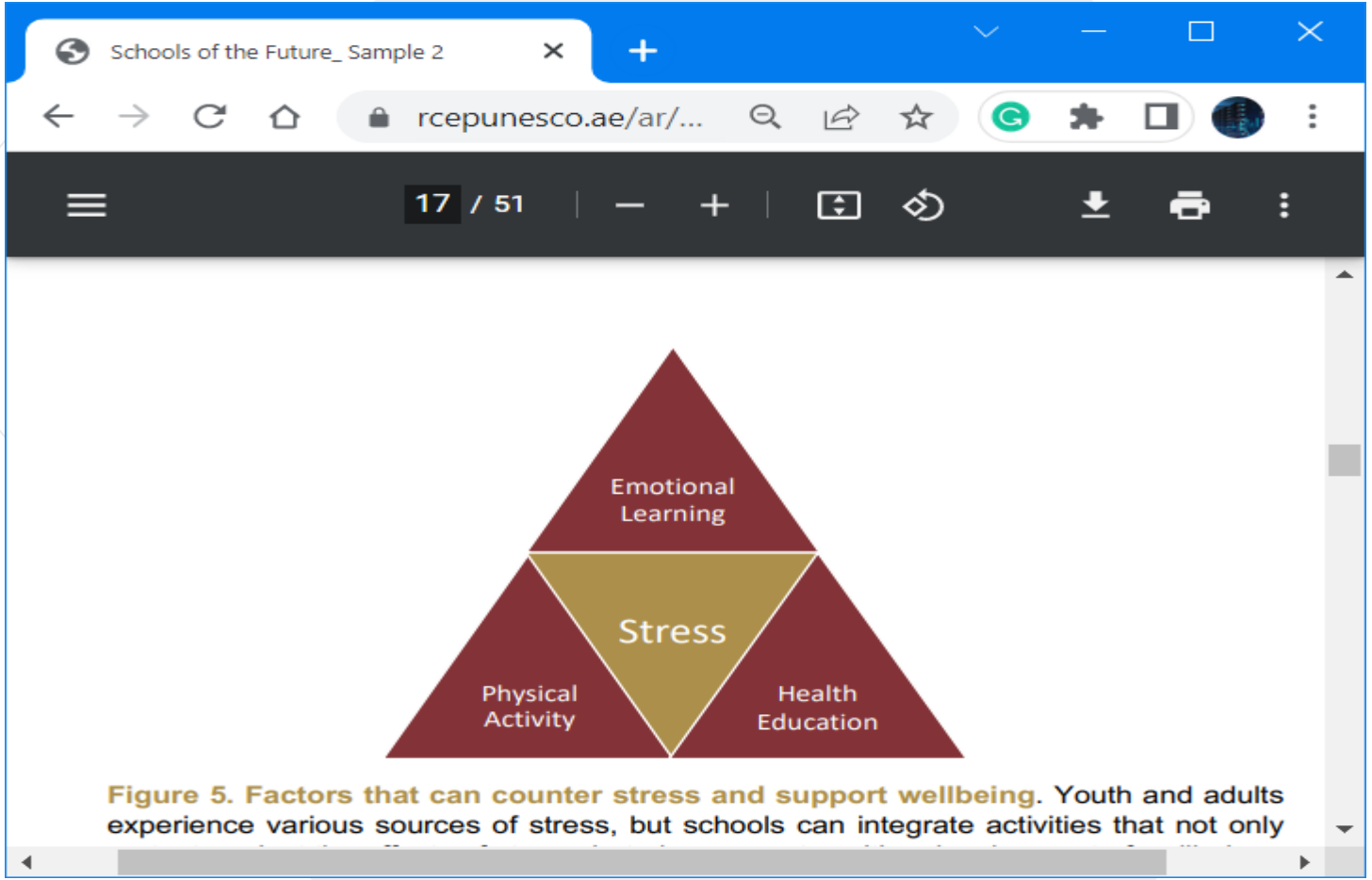

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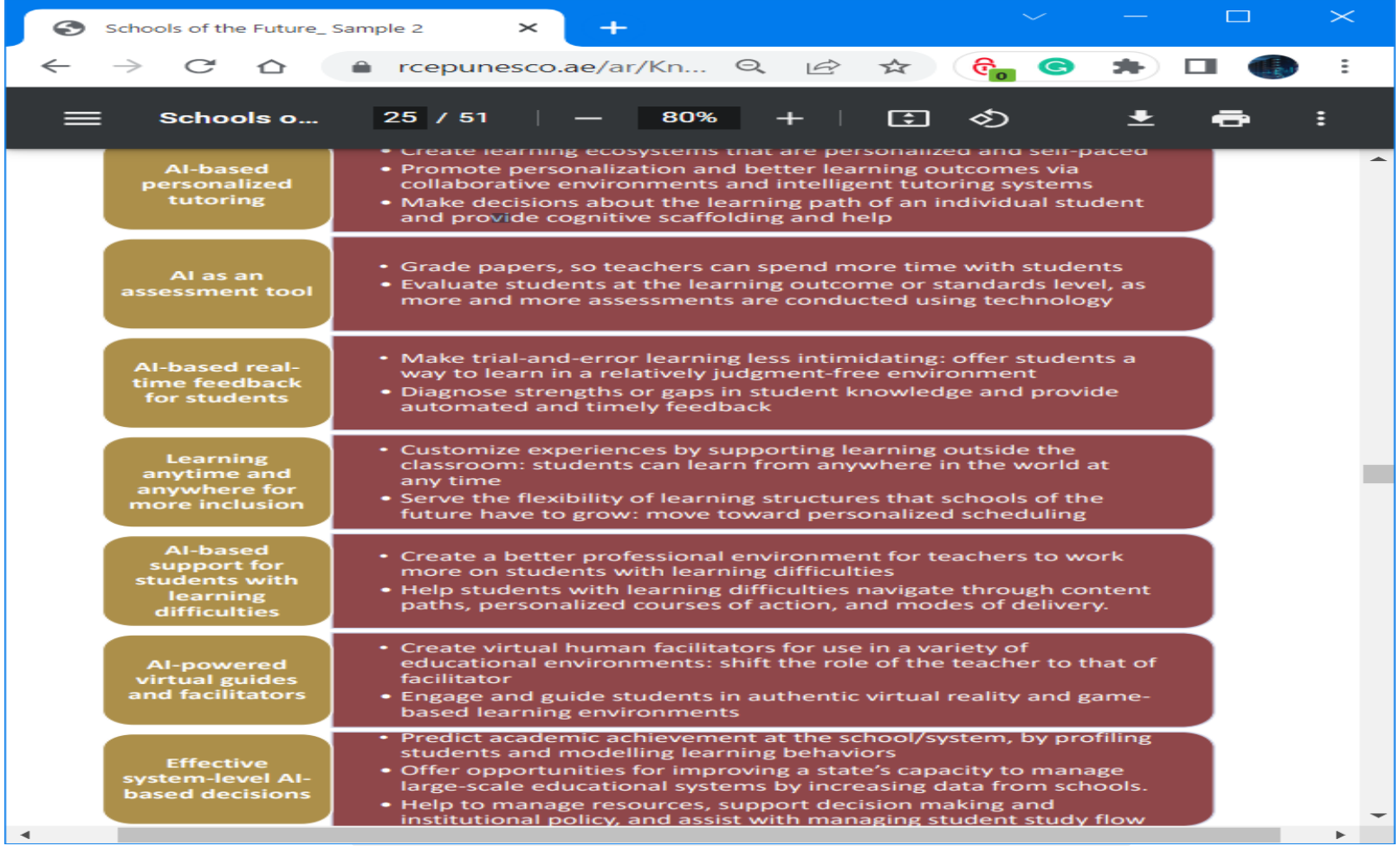

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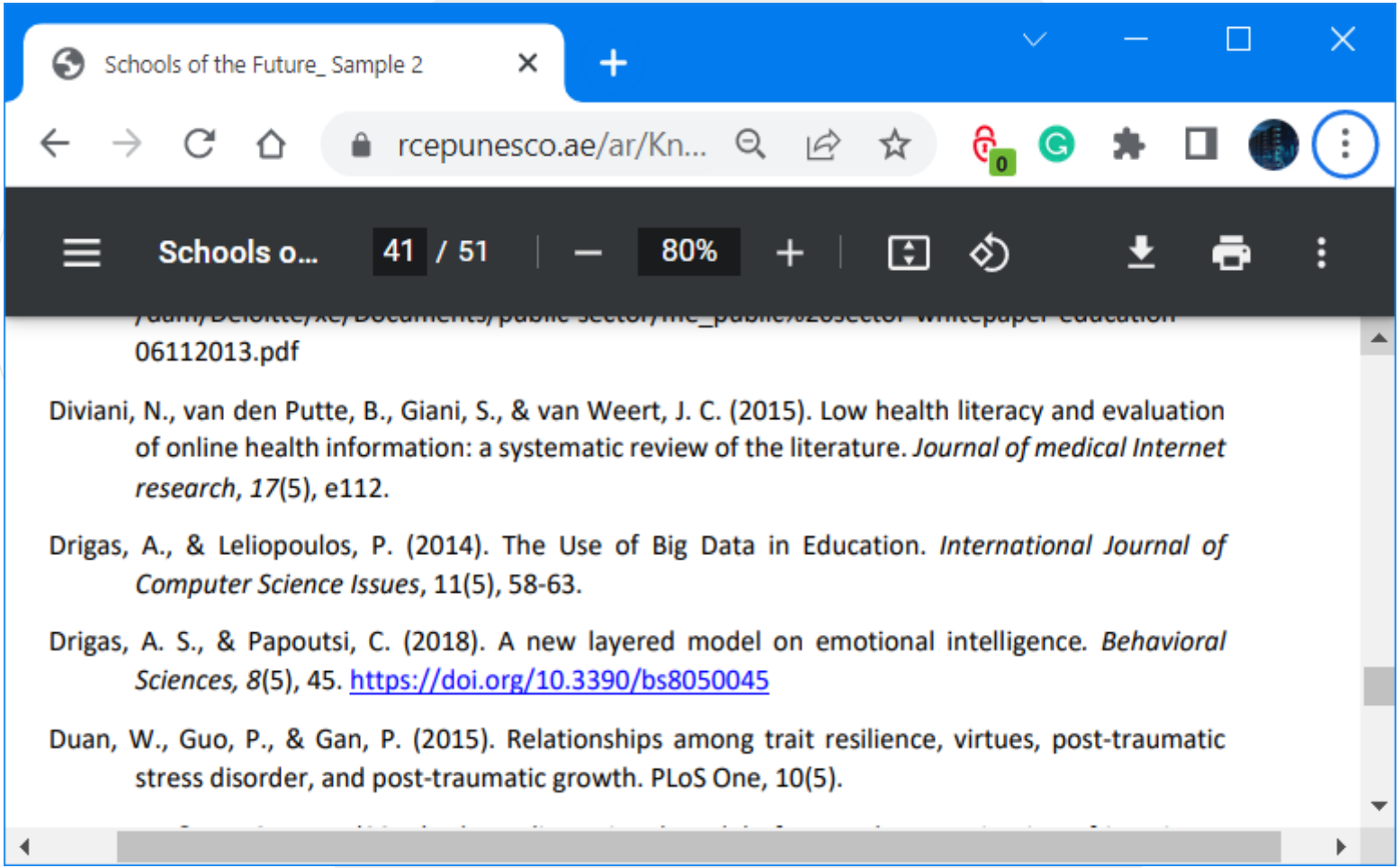

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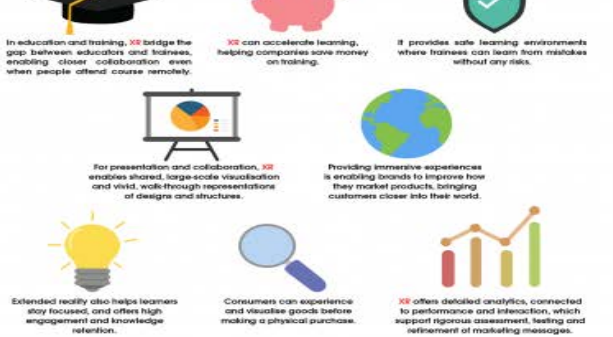
ΟΙ ΤΕΧΝΟΛΟΓΙΕΣ ΤΟΥ ΜΕΛΛΟΝΤΟΣ ΜΕΣΑ ΣΤΟ ΣΧΟΛΕΙΟ

ARTIFICIAL INTELLIGENCE- MACHINE LEARNING-BIG DATA
CLOUD COMPUTING
FIBER NETWORKS, GIGABIT
5G/6G- ΑΣΥΡΜΑΤΕΣ ΤΕΧΝΟΛΟΓΙΕΣ
INTERNET OF THINGS
ROBOTICS EVERYWHERE IN EDUCATION
AVATARS AND DIGITAL ASSISTANCE/COUNSELORS
VIRTUAL LABS & VIRTUAL EXPERIMENTS
EXTENDED VIRTUAL AUGMENTED MIXED REALITY
VIRTUAL CLASSES & VIRTUAL PRESENCE
FUTURE DEVICES – NEW TECHNOLOGIES -SMARTPHONES –HOLOGRAMS
HUMAN MACHINE INTERFACES NEW ERA
BRAIN COMPUTER INTERFACES-BODY ANTENNAS-WEARABLES
NEW SKILLS FOR INDUSTRY REVOLUTION 4.0- 5.0 & BEYOND
COMPONENTS (ROBOTICS, DRONES,3D PRINTING)
GAMES -GAMIFICATION



VR VIRTUAL REALITY

Virtual Reality might be the one you are most familiar with.VR is the term used to describe a three-dimensional, computer generated environment which can be explored and interacted with by a person. That person is immersed within this virtual environment and in most cases is able to manipulate objects or perform a series of actions. Many people know VR through the use of Head-Mounted Devices (HMD) like the Oculus Rift, HTC Vive, or Google Cardboard.

WHAT ARE THE ADVANTAGES OF VR?

In research and development, design and review and education and training, virtual reality (VR) offer a broad range of applications for enterprises and organisations.

MR MIXED REALITY

Mixed Reality blends elements of both AR and VR, where physical and digital objects co-exist and interact in real-time. It allows the user to interact with combined virtual and real objects. Examples of MR include games like Halo Recruit or apps such as HoloTour.

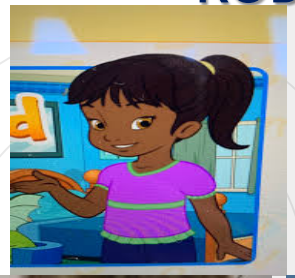
WHAT ARE THE ADVANTAGES OF MR?

MR's combination physical and digital is making significant changes to the mainstream in various industries, including manufacturing, design and construction, medical, education and research.

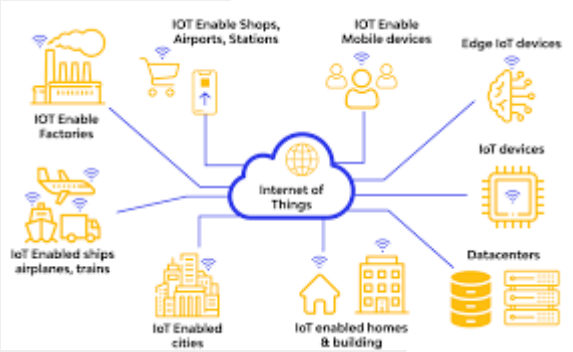
ST Engineering

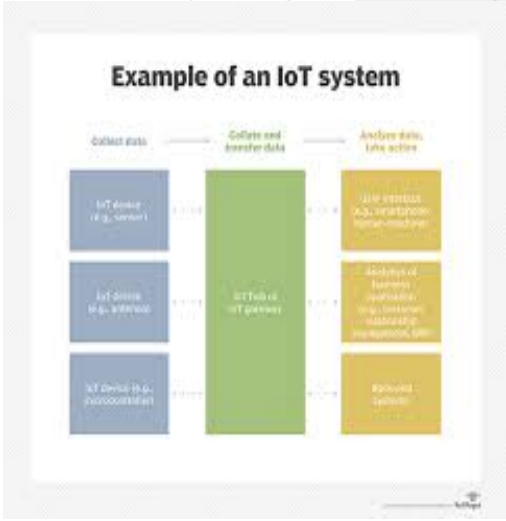

XR
EXTENDED REALITIES
AR
AUGMENTED REALITY
VR
VIRTUAL REALITY
MR
MIXED REALITY

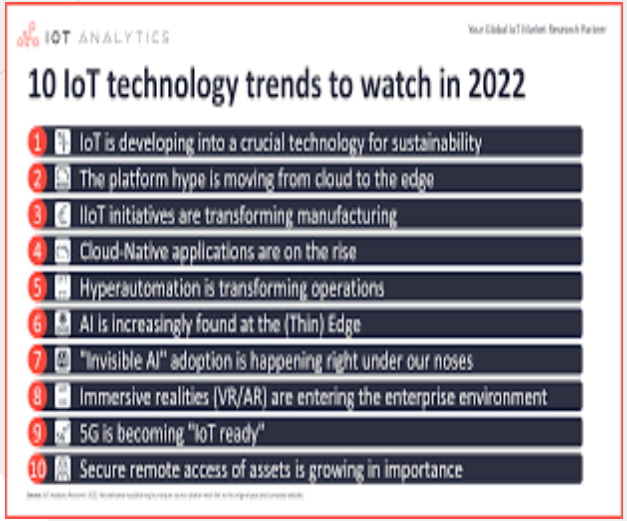
ROBOTS AND AVATARS IN SCHOOL

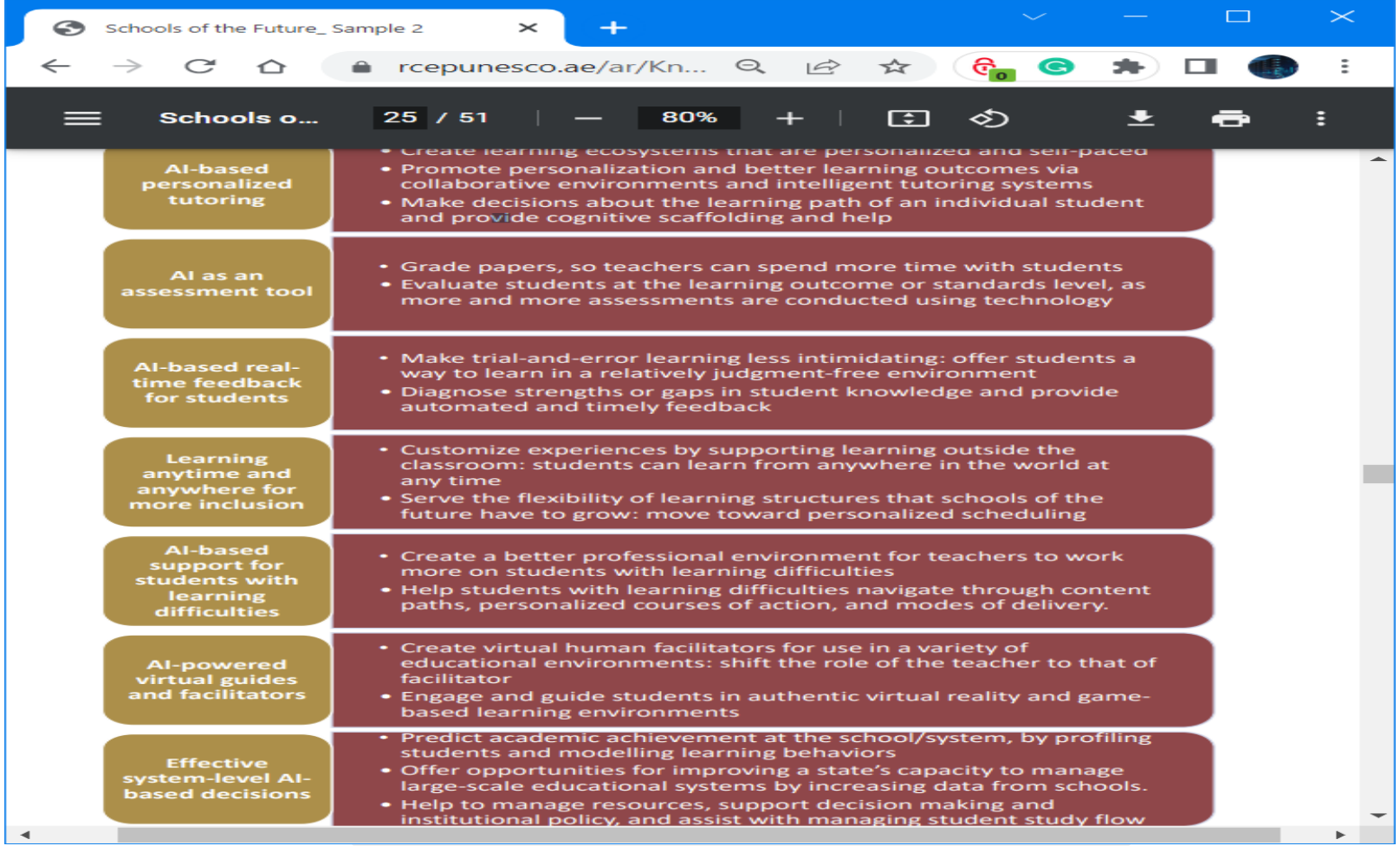


INTERNET OF THINGS – ΌΛΑ ΔΙΑΔΙΚΤΥΩΜΕΝΑ









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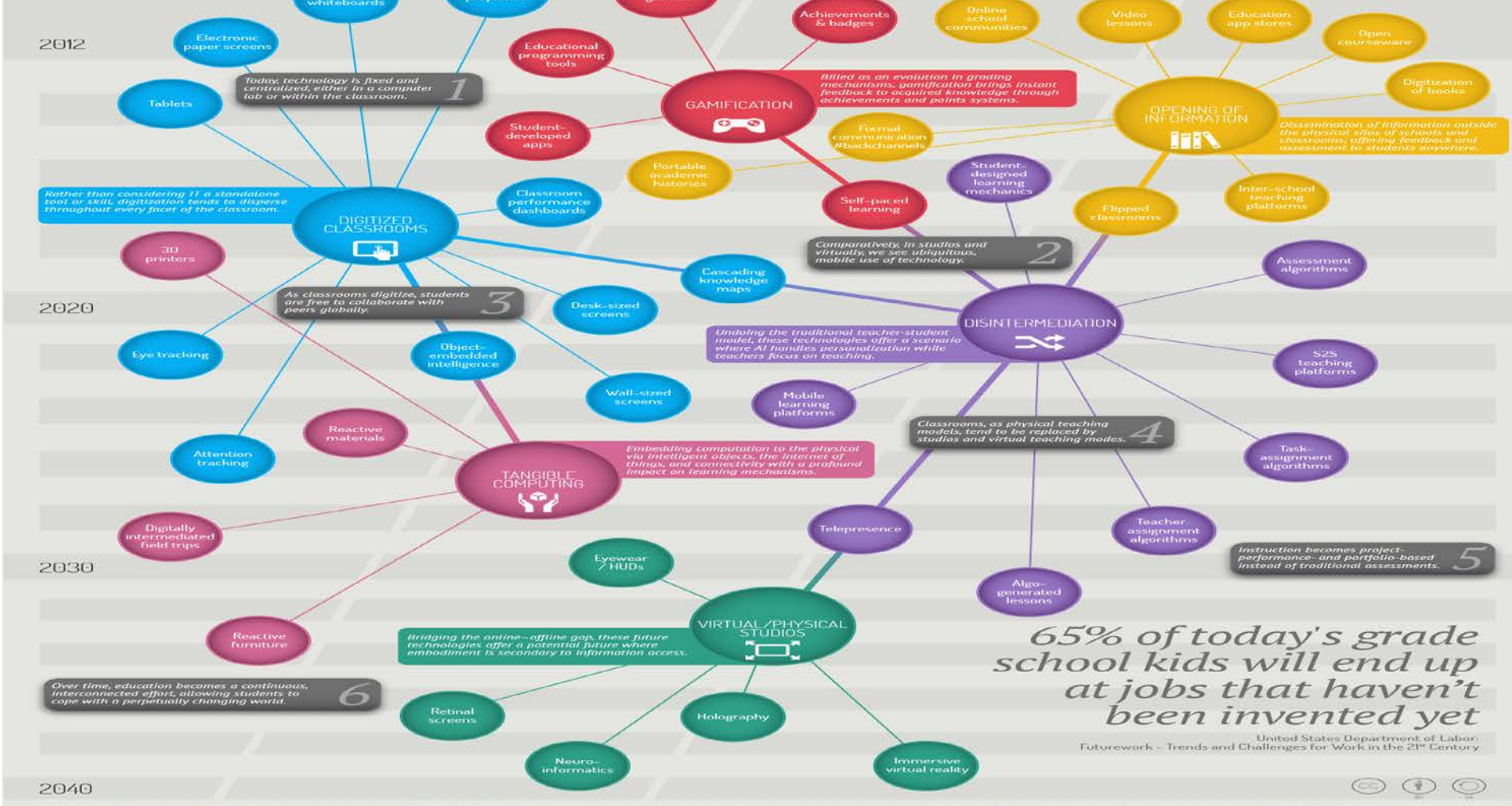
10 ROLES FOR ARTIFICIAL INTELLIGENCE IN EDUCATION

1. Activity automation
2. Adaptive software
3. Targeted improvement
4. Tutorial support
5. Helpful feedback
6. Information interaction
7. Changing teacher roles
8. Trial-and error learning
9. Actionable data
10. Changing learning nature

teachthought
WE GROW TEACHERS

Educational platforms based on Artificial Intelligence technology

- Third Space Learning
- Little Dragon
- Brainy
- CTI
- Carnegie Learning
- ThinkerMath


2012
2020
2030
2040
Electronic paper screens
Tablets
Today, technology is fixed and centralized, either in a computer lab or within the classroom. 1
Educational programming tools
Student-developed apps
GAMIFICATION
Billed as an evolution in grading mechanisms, gamification brings instant feedback to acquired knowledge through achievements and points systems.
Achievements & badges
Online school communities
Video lessons
Education app stores
Open courseware
Digitization of books
OPENING OF INFORMATION
Dissemination of information outside the physical silos of schools and classrooms, offering feedback and assessment to students anywhere.
Formal communication #backchannels
Portable academic histories
Student-designed learning mechanics
Inter-school learning platforms
Flipped classrooms
Self-paced learning
Rather than considering IT a standalone tool or skill, digitization tends to disperse throughout every facet of the classroom.
DIGITIZED CLASSROOMS
Classroom performance dashboards
3D printers
Comparatively, in studios and virtually, we see ubiquitous, mobile use of technology. 2
Assessment algorithms
As classrooms digitize, students are free to collaborate with peers globally. 3
Cascading knowledge maps
Desk-sized screens
DISINTERMEDIATION
Undoing the traditional teacher-student model, these technologies offer a scenario where AI handles personalization while teachers focus on teaching.
Eye tracking
Object-embedded intelligence
Wall-sized screens
S2S teaching platforms
Mobile learning platforms
Classrooms, as physical teaching models, tend to be replaced by studios and virtual teaching modes. 4
Reactive materials
Attention tracking
TANGIBLE COMPUTING
Embedding computation to the physical via intelligent objects, the Internet of things, and connectivity with a profound impact on learning mechanisms.
Task-assignment algorithms
Digitally intermediated field trips
Telepresence
Teacher-assignment algorithms
Instruction becomes project-performance- and portfolio-based instead of traditional assessments. 5
Eyewear / HUDs
Algo-generated lessons
Reactive furniture
VIRTUAL/PHYSICAL STUDIOS
Bridging the online–offline gap, these future technologies offer a potential future where embodiment is secondary to information access.
Over time, education becomes a continuous, interconnected effort, allowing students to cope with a perpetually changing world. 6
Retinal screens
Holography
Neuro-informatics
Immersive virtual reality
65% of today's grade school kids will end up at jobs that haven't been invented yet
United States Department of Labor
Futurework - Trends and Challenges for Work in the 21st Century

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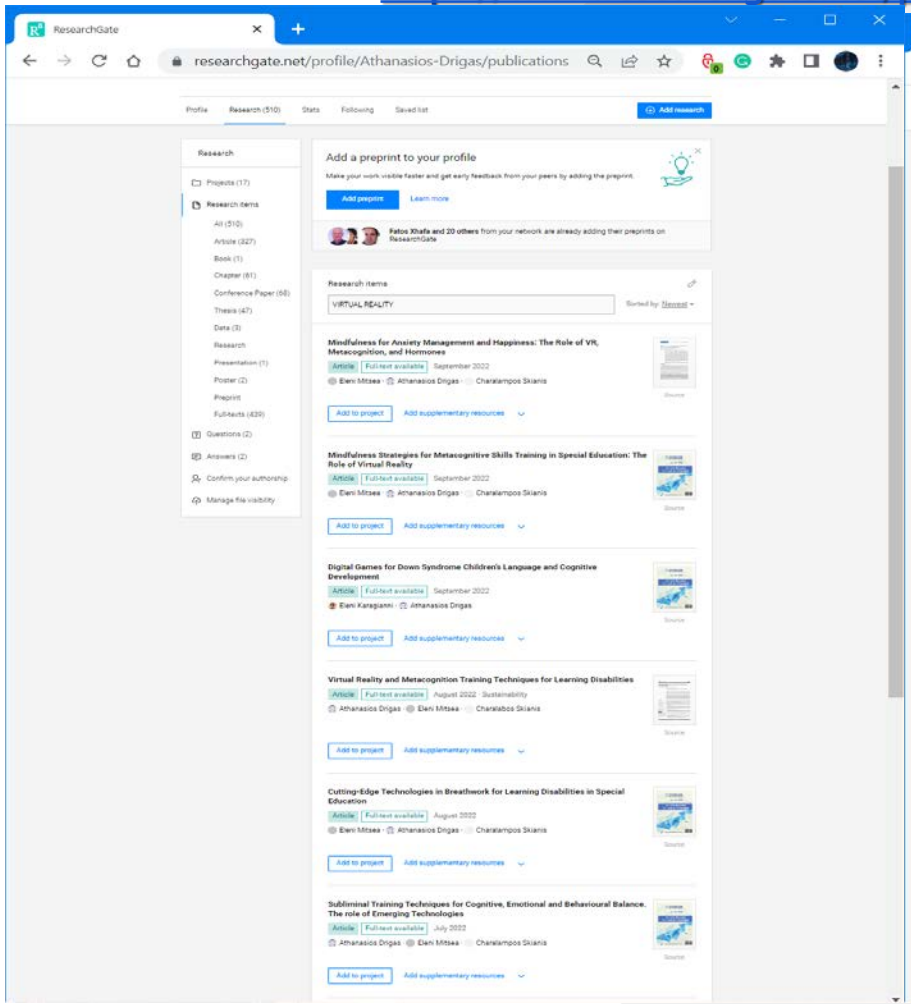

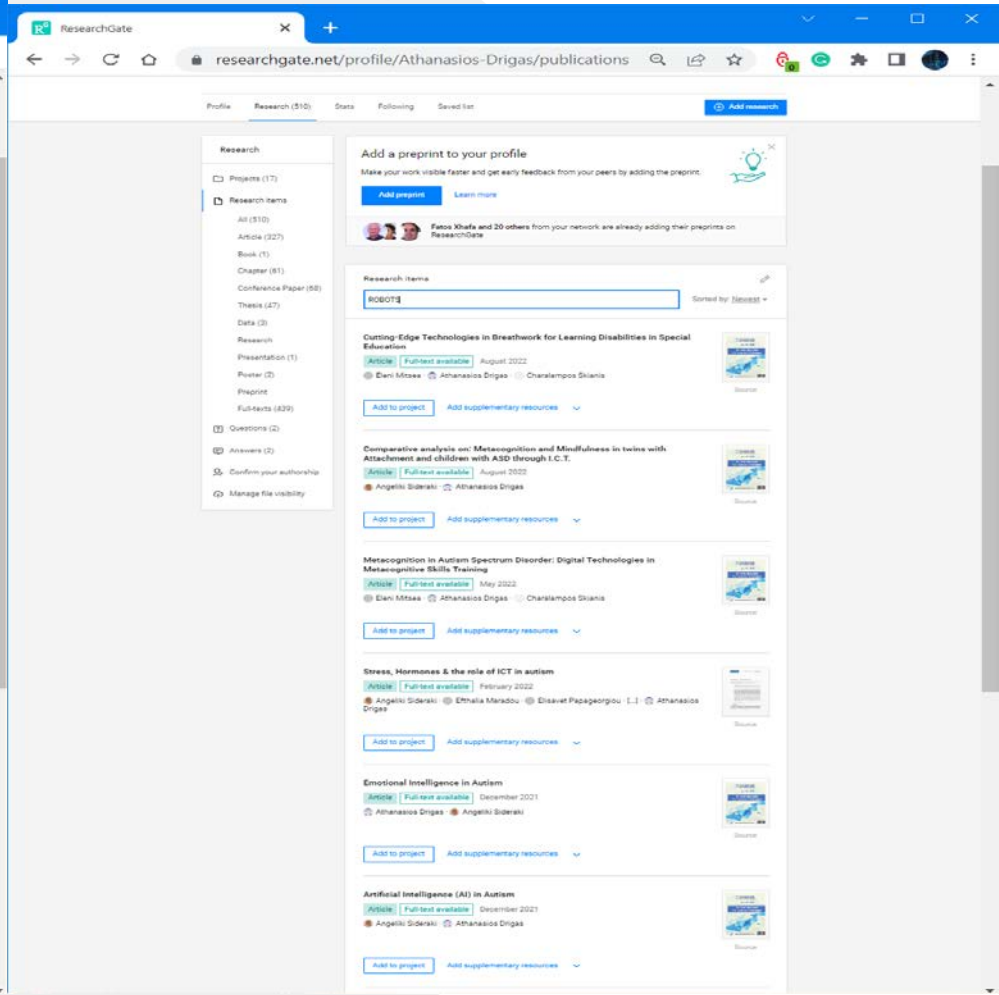

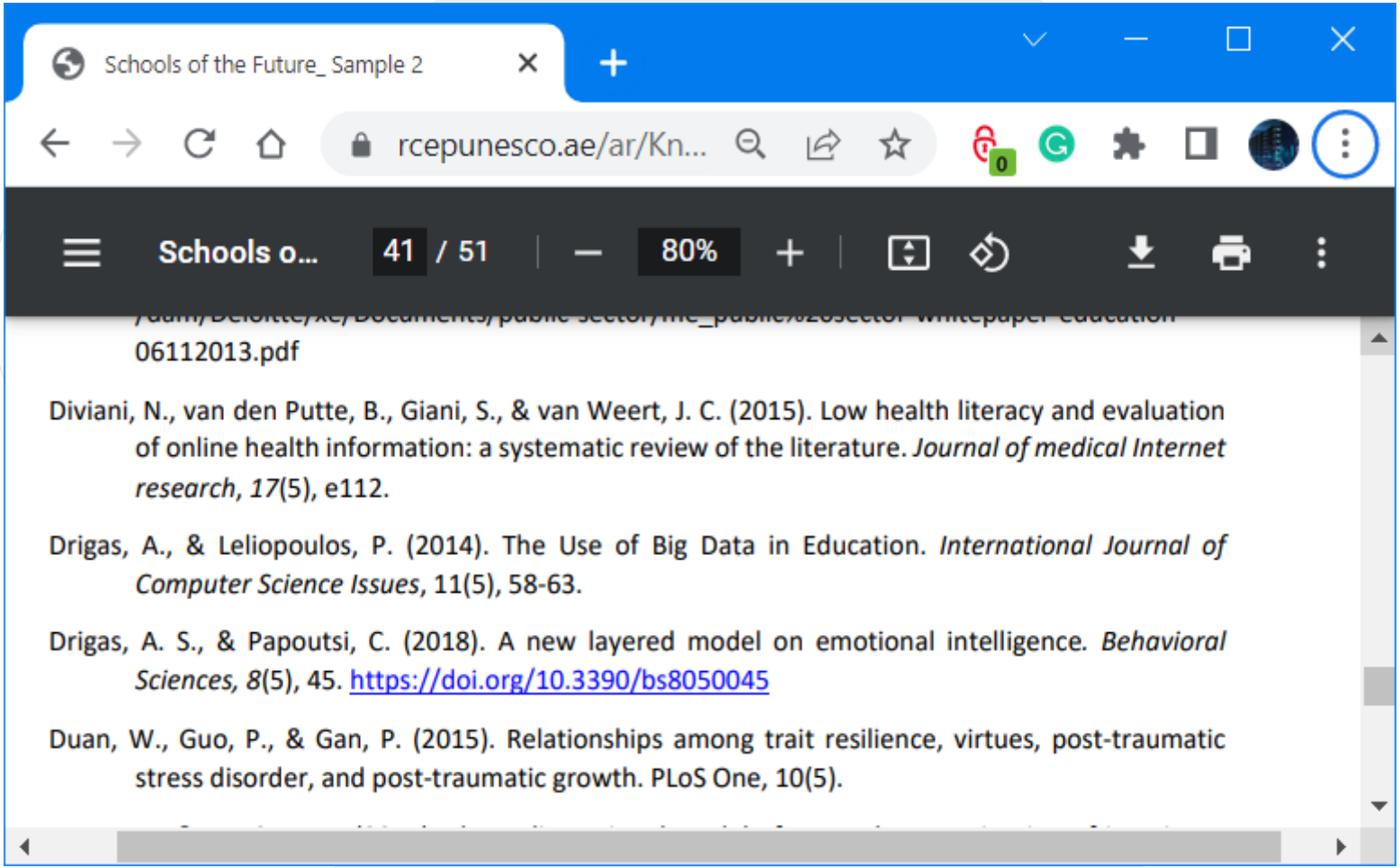

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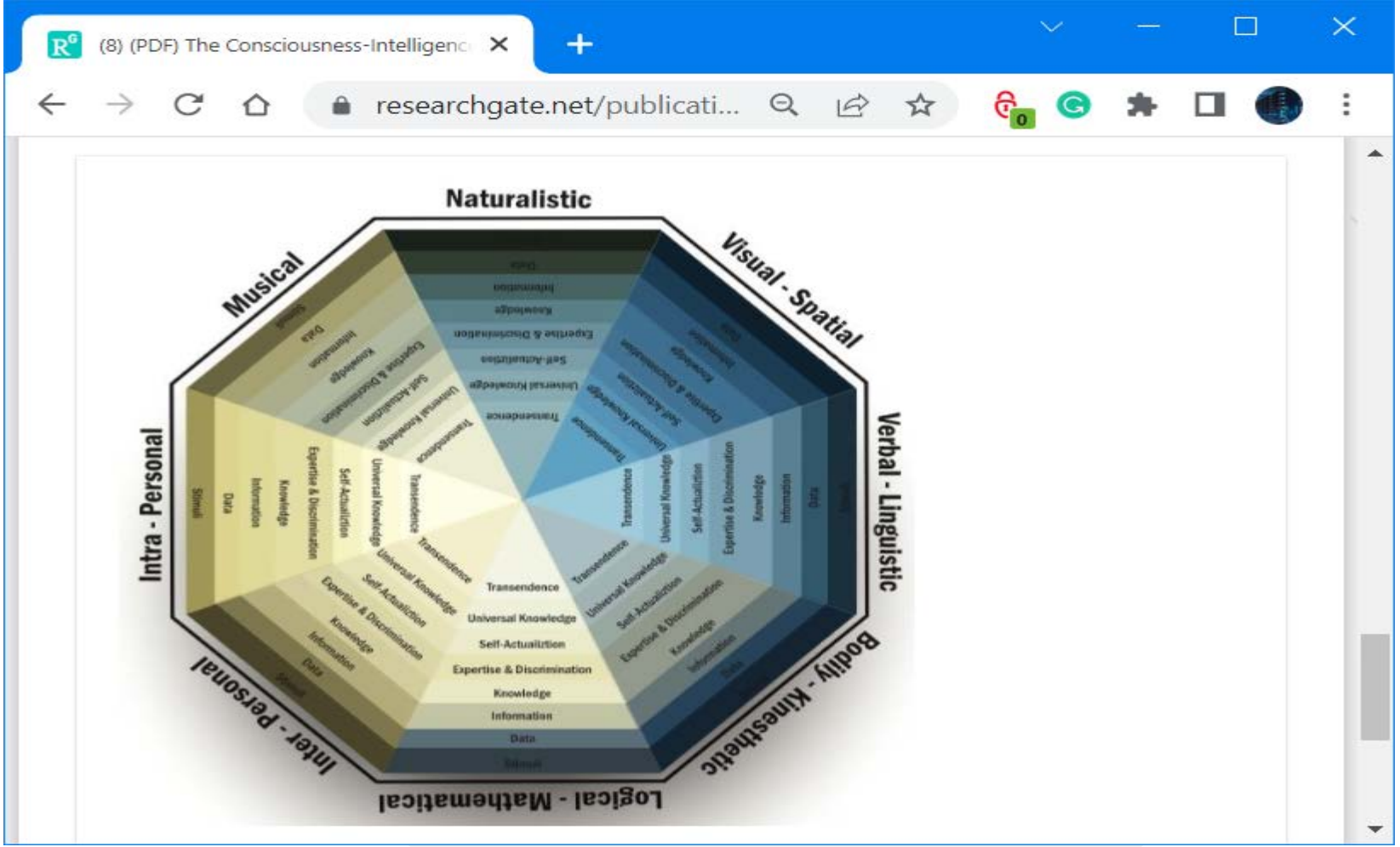

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3. The Pyramid of Emotional Intelligence: The Nine-Layer Model

Taking into consideration all the theories of the past concerning pyramids and layer models dealing with EI, we analyze the levels of our pyramid step by step (Figure 1), their characteristics, and the course of their development so as to conquer the upper levels, transcendence and emotional unity, as well as pointing out the significance of EI. Our model includes features from both constructions (the Ability EI and the Trait EI model) in a more hierarchical structure. The ability level refers to awareness (self and social) and to management. The level of trait refers to the mood associated with emotions and the tendency to behave in a certain way in emotional states considering other important elements that this construction includes as well. The EI pyramid is also based on the concepts of intrapersonal and interpersonal intelligences of Gardner [92,93].

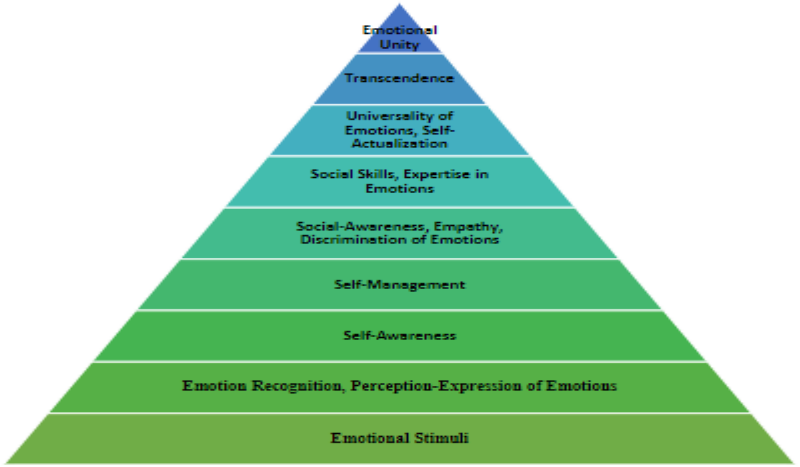

Figure 1. The emotional intelligence pyramid (9-layer model).

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Success: A 9 Layered-based Model of Giftedness

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8 Pillars X 8 Layers Model of Metacognition Educational Strategies, Exercises &Trainings

August 2021 · International Journal of Online and Biomedical Engineering (iJOE)
17(8):115-134 · Follow journal
DOI: 10.3991/ijoe.v17i08.23563

Projects: Intelligence, Emotional Intelligence, Consciousness, Metacognition, Giftedness, Theories, Models, Technologies. · ICTS and other interventions diet, vitamins etc for Special education, Autism, ADHD, Dyslexia · STEM ROBOTICS AI MOBILES GAMES BCI & VR TO IMPROVE LEARNING ABILITIES

Athanasios Drigas · Eleni Mitsea

Research Interest Score	23.5
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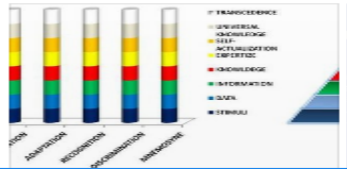
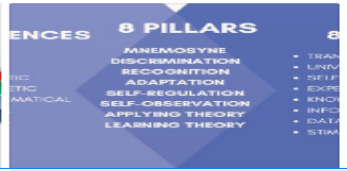
Abstract and figures

Metacognition is one of the foremost cardinal factors of achievement in the 21st century. Despite extensive research, there is still the need to build a unique model based on multidisciplinary research illuminating questions as regards the real nature of metacognition and the methods to develop metacognitive abilities. The current study presents a new layered model of metacognition based on well-established theories derived from cognitive science, psychology, physical and computer sciences, environmental and other sciences, even from philosophy. We describe in detail the cognitive and metacognitive processes involved at each layer, while particular emphasis is placed on the relation between the control processes as well as the special role of attention. According to our model, each layer of metacognition describes a higher-order control system which operates under the rule of a series of attention processes at an ever more refined, abstract and united level. The same applies to the cognitive processes and abilities such as attention , memory, perception, pattern recognition. At each higher level, they display more advanced attributes and functions responding to the necessity of creating more abstract mental representations and upper class motivations, thoughts and emotions. In addition, we recommend a number of strategies that support the metacognitive development at each level of the hierarchy. The multi-layered model of metacognition targets at enriching our understanding of how metacogni-tion evolves and it has the potential to guide the development of more effective strategies in educational system. 1 Introduction Many researchers have attempted to develop theories and models of metacognition. Flavell [1] recognized that metacognition consisted of both monitoring and regulating aspects. He proposed a model of metacognitive monitoring which includes the following components: metacognitive knowledge, metacognitive experiences, tasks or goals and strategies.





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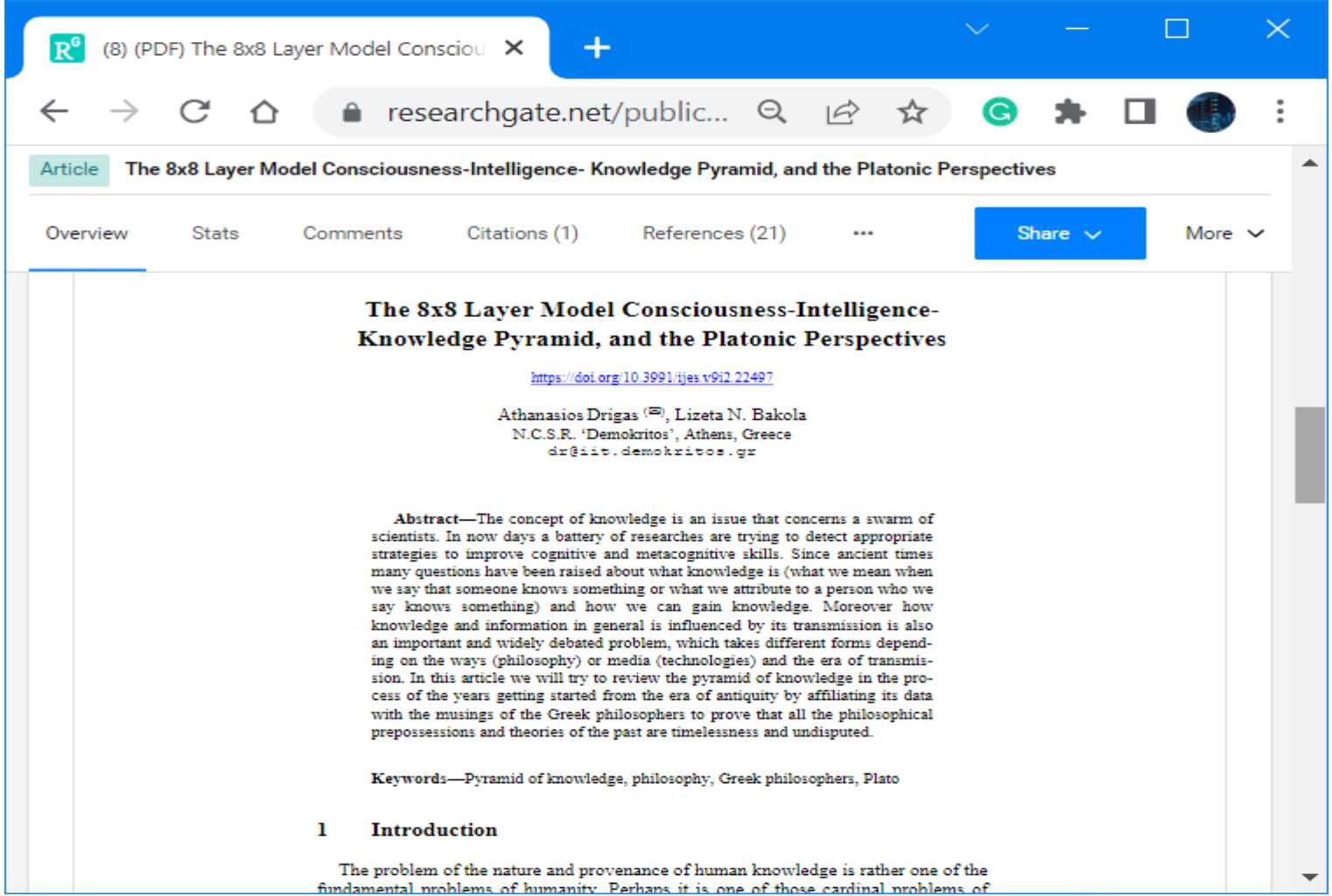

The 8x8 Layer Model Consciousness-Intelligence-Knowledge Pyramid, and the Platonic Perspectives

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Abstract—The concept of knowledge is an issue that concerns a swarm of scientists. In now days a battery of researches are trying to detect appropriate strategies to improve cognitive and metacognitive skills. Since ancient times many questions have been raised about what knowledge is (what we mean when we say that someone knows something or what we attribute to a person who we say knows something) and how we can gain knowledge. Moreover how knowledge and information in general is influenced by its transmission is also an important and widely debated problem, which takes different forms depending on the ways (philosophy) or media (technologies) and the era of transmission. In this article we will try to review the pyramid of knowledge in the process of the years getting started from the era of antiquity by affiliating its data with the musings of the Greek philosophers to prove that all the philosophical prepossessions and theories of the past are timelessness and undisputed.

Keywords—Pyramid of knowledge, philosophy, Greek philosophers, Plato

1 Introduction

The problem of the nature and provenance of human knowledge is rather one of the fundamental problems of humanity. Perhaps it is one of those cardinal problems of

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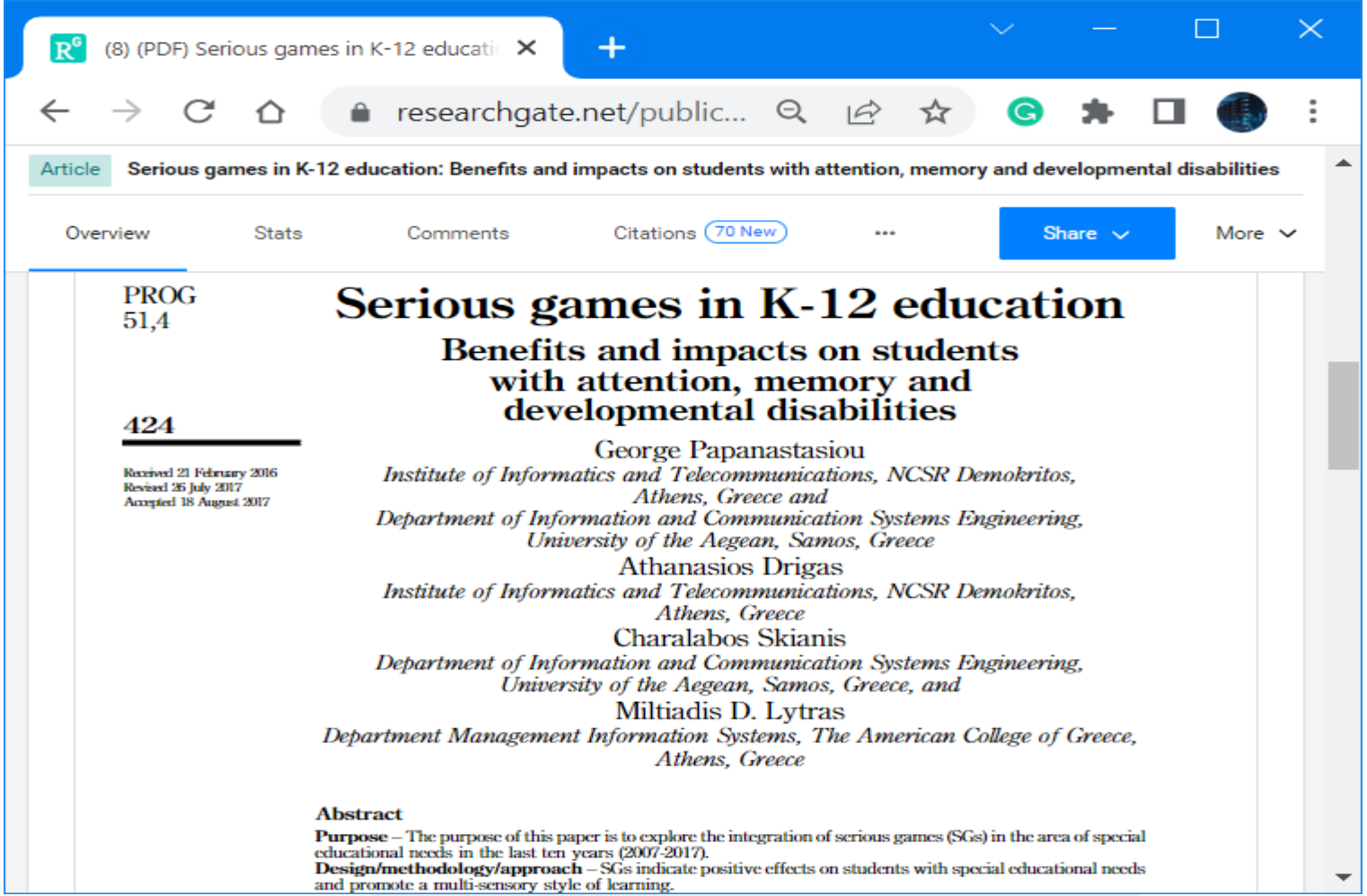

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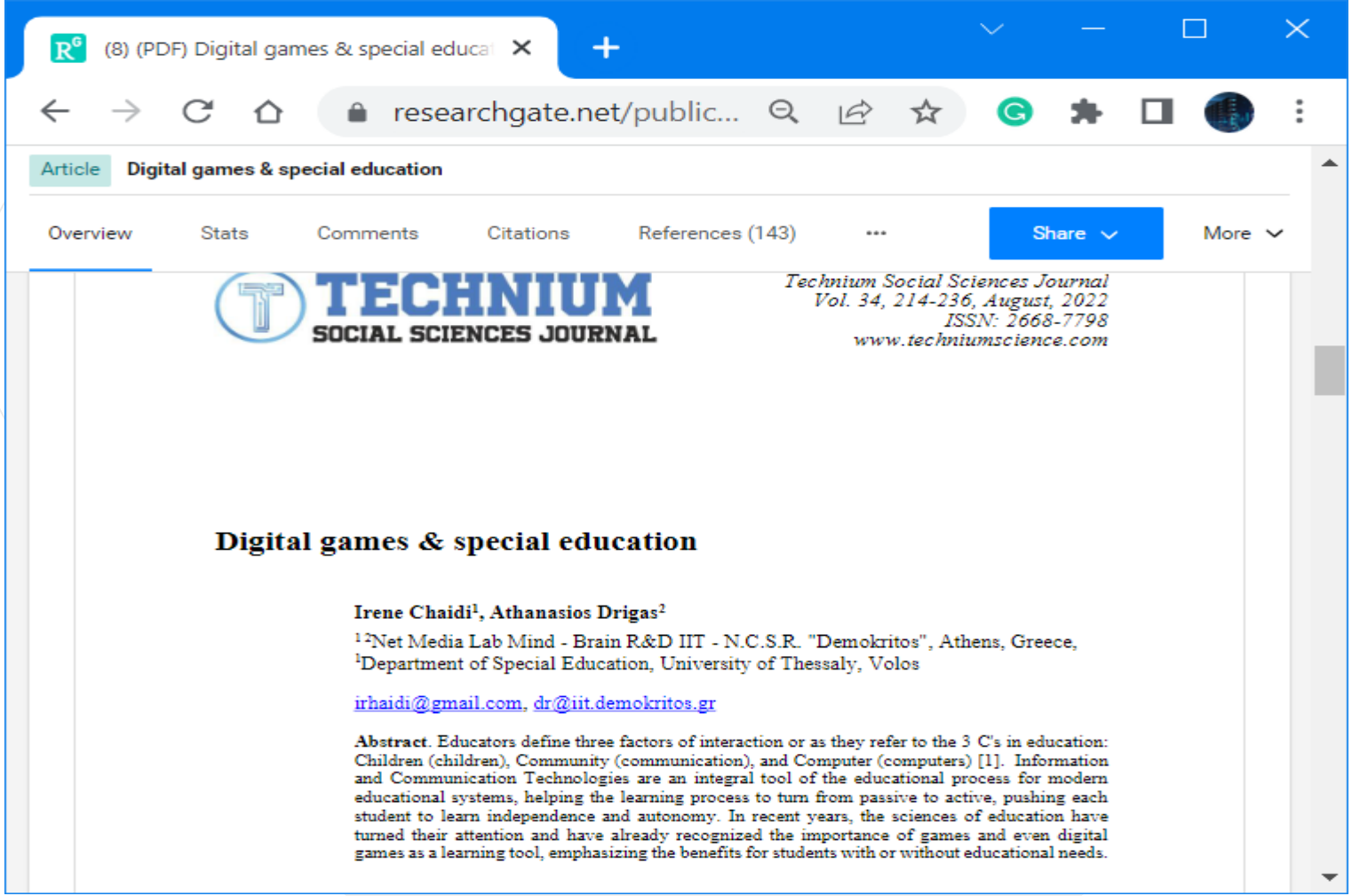

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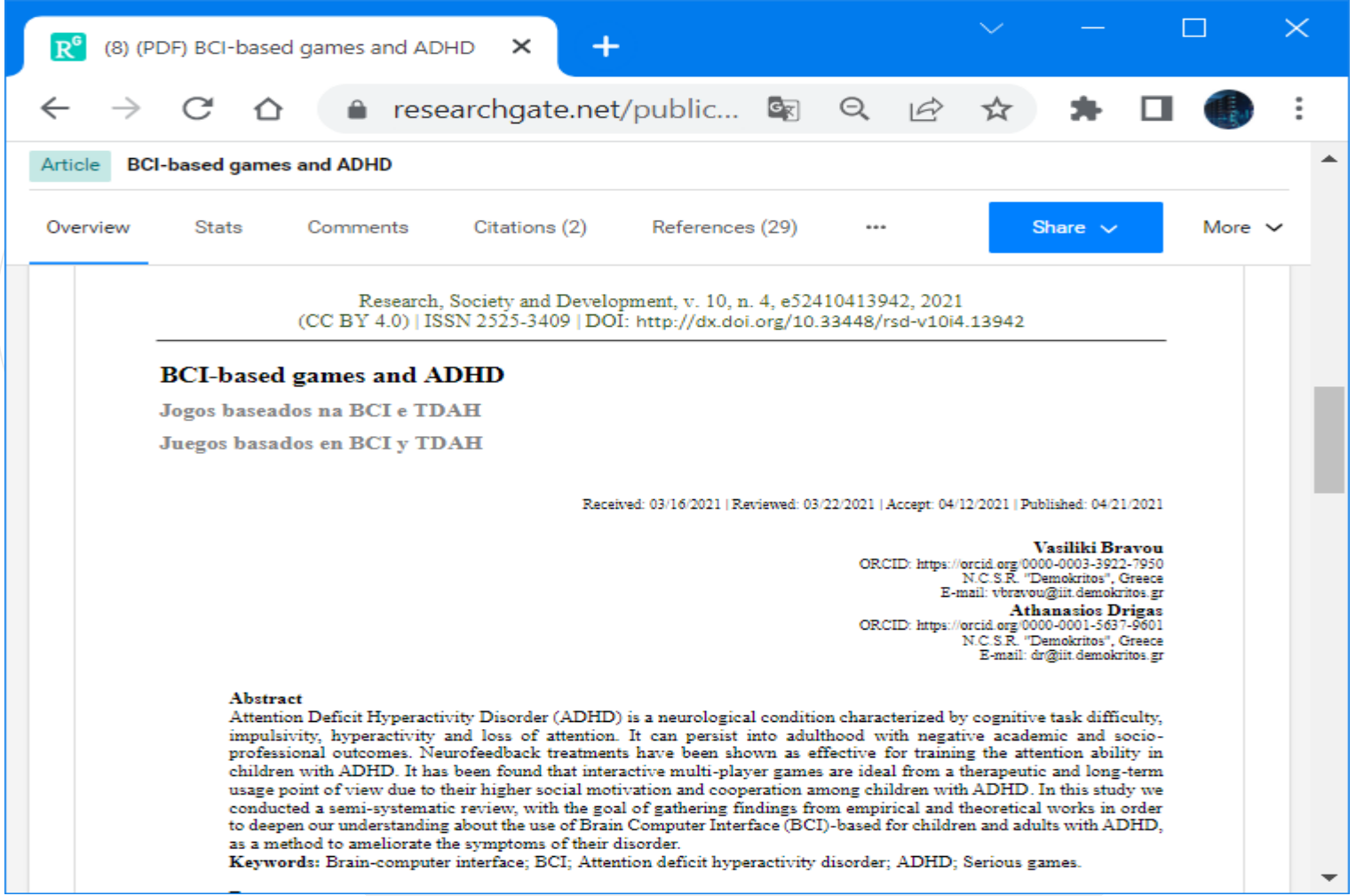

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BCI-based games and ADHD

Jogos baseados na BCI e TDAH

Juegos basados en BCI y TDAH

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Abstract
Attention Deficit Hyperactivity Disorder (ADHD) is a neurological condition characterized by cognitive task difficulty, impulsivity, hyperactivity and loss of attention. It can persist into adulthood with negative academic and socio-professional outcomes. Neurofeedback treatments have been shown as effective for training the attention ability in children with ADHD. It has been found that interactive multi-player games are ideal from a therapeutic and long-term usage point of view due to their higher social motivation and cooperation among children with ADHD. In this study we conducted a semi-systematic review, with the goal of gathering findings from empirical and theoretical works in order to deepen our understanding about the use of Brain Computer Interface (BCI)-based for children and adults with ADHD, as a method to ameliorate the symptoms of their disorder.
Keywords: Brain-computer interface; BCI; Attention deficit hyperactivity disorder; ADHD; Serious games.

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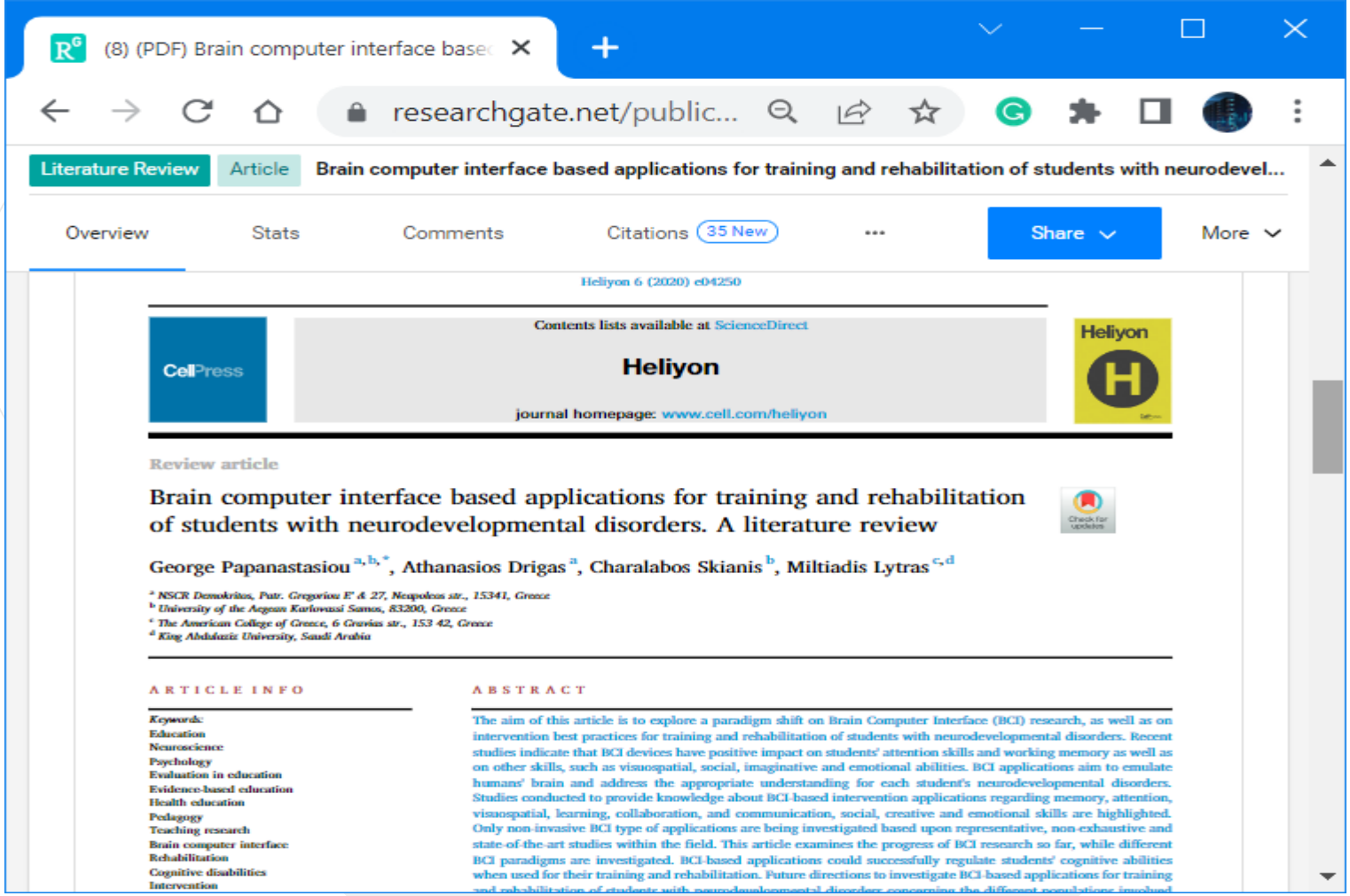

(8) (PDF) Brain computer interface base

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Review article

Brain computer interface based applications for training and rehabilitation of students with neurodevelopmental disorders. A literature review

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ABSTRACT

The aim of this article is to explore a paradigm shift on Brain Computer Interface (BCI) research, as well as on intervention best practices for training and rehabilitation of students with neurodevelopmental disorders. Recent studies indicate that BCI devices have positive impact on students' attention skills and working memory as well as on other skills, such as visuospatial, social, imaginative and emotional abilities. BCI applications aim to emulate humans' brain and address the appropriate understanding for each student's neurodevelopmental disorders. Studies conducted to provide knowledge about BCI-based intervention applications regarding memory, attention, visuospatial, learning, collaboration, and communication, social, creative and emotional skills are highlighted. Only non-invasive BCI type of applications are being investigated based upon representative, non-exhaustive and state-of-the-art studies within the field. This article examines the progress of BCI research so far, while different BCI paradigms are investigated. BCI-based applications could successfully regulate students' cognitive abilities when used for their training and rehabilitation. Future directions to investigate BCI-based applications for training and rehabilitation of students with neurodevelopmental disorders concerning the different populations involved

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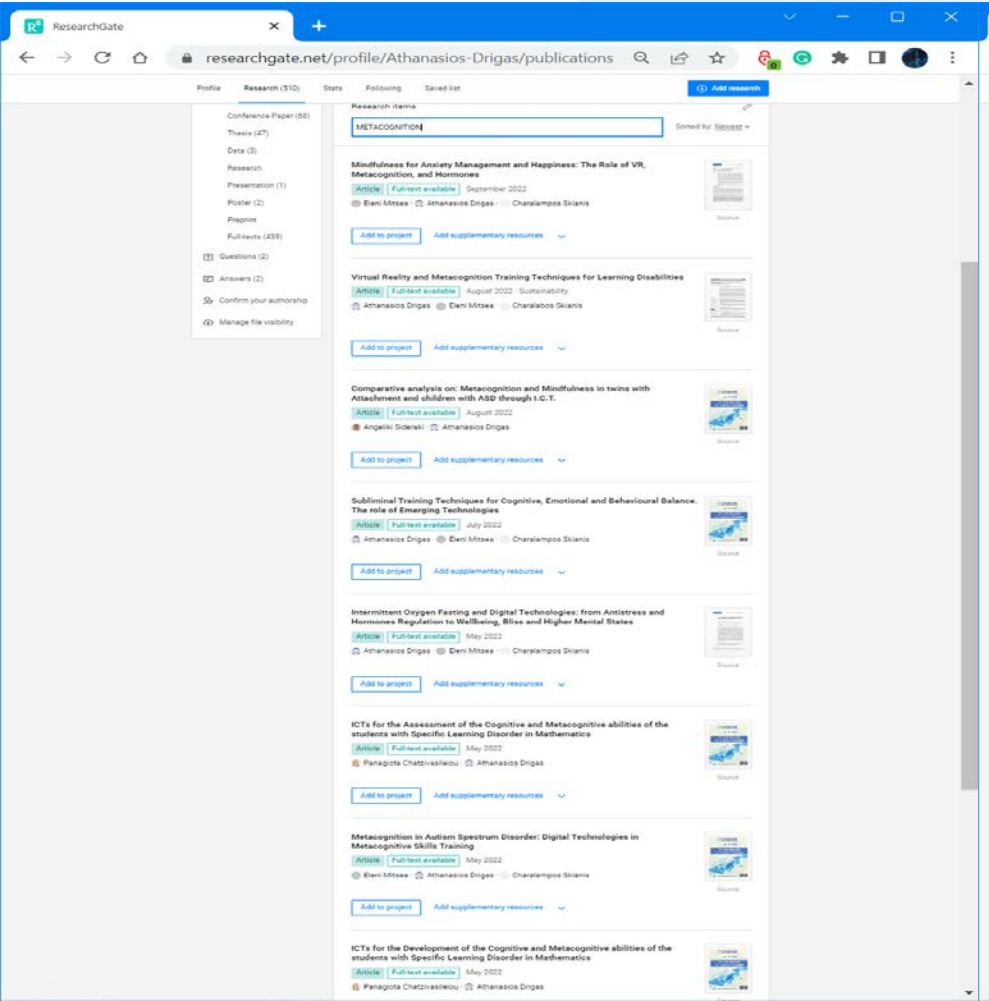

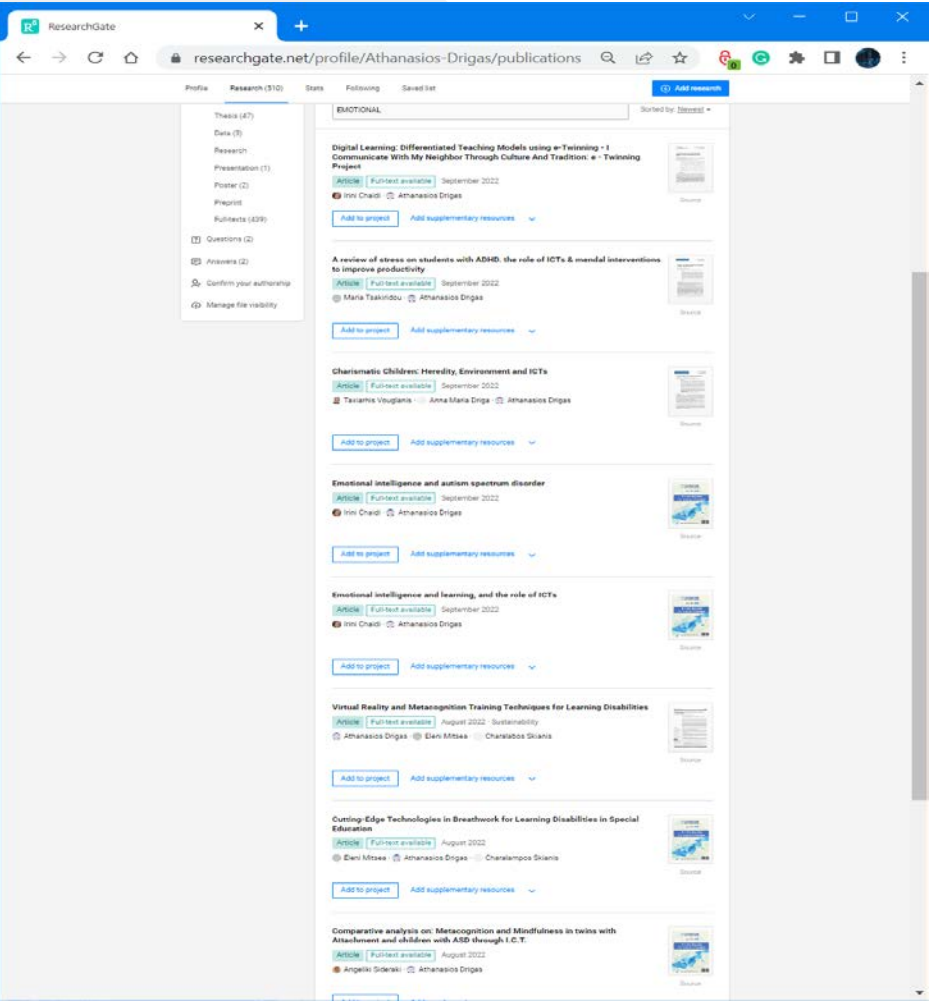

Envisioning the future of education technology

envisioningtech.com · tfaresearch.com · Marie Curie FP7

Education lies at a peculiar crossroad in society. On one hand it has the responsibility of anticipating real-life skills by preparing us for an increasingly complex world – but education methodologies can only be formalized after practices have been defined. This dichotomy is particularly aggravated when it comes to technology, where fast-paced innovation and perpetual change is the only constant.

This visualization attempts to organize a series of emerging technologies that are likely to influence education in the upcoming decades. Despite its inherently speculative nature, the driving trends behind the technologies can already be observed, meaning it's a matter of time before these scenarios start panning out in learning environments around the world.

Classroom

The prevailing paradigm of a single teacher addressing dozens of students unidirectionally in a physical setting.

2012

Interactive whiteboards

Data projectors

Electronic paper screens

Tablets

Today, technology is fixed and centralized, either in a computer lab or within the classroom. 1

DIGITIZED CLASSROOMS

Rather than considering IT a standalone tool or skill, digitization tends to disperse throughout every facet of the classroom.

Classroom performance dashboards

2020

3D printers

As classrooms digitize, students are free to collaborate with peers globally. 3

Desk-sized screens

Eye tracking

Object-embedded intelligence

Wall-sized screens

Reactive materials

Attention tracking

TANGIBLE COMPUTING

Embedding computation to the physical via intelligent objects, the internet of things, and connectivity with a profound impact on learning mechanisms.

Digitally intermediated field trips

2030

Reactive furniture

Over time, education becomes a continuous, interconnected effort, allowing students to cope with a perpetually changing world. 6

Retinal screens

Neuro-informatics

Studio

Peer to Peer learning environments where groups coalesce to discuss, learn and solve problems with each other, and the teacher serves as a facilitator.

Educational games

Achievements & badges

Educational programming tools

GAMIFICATION

Billed as an evolution in grading mechanisms, gamification brings instant feedback to acquired knowledge through achievements and points systems.

Student-developed apps

Formal communication #backchannels

Portable academic histories

Self-paced learning

Student-designed learning mechanics

Comparatively, in studios and virtually, we see ubiquitous, mobile use of technology. 2

Cascading knowledge maps

DISINTERMEDIATION

Undoing the traditional teacher-student model, these technologies offer a scenario where AI handles personalization while teachers focus on teaching.

Mobile learning platforms

Classrooms, as physical teaching models, tend to be replaced by studios and virtual teaching modes. 4

Telepresence

Eyewear / HUDs

VIRTUAL / PHYSICAL STUDIOS

Bridging the online-offline gap, these future technologies offer a potential future where embodiment is secondary to information access.

Holography

Immersive virtual reality

Virtual

Disembodied environments, where learning, discussion and assessment happen regardless of physicality or geography.

Online school communities

Video lessons

Education app stores

Open courseware

Digitization of books

OPENING OF INFORMATION

Dissemination of information outside the physical silos of schools and classrooms, offering feedback and assessment to students anywhere.

Flipped classrooms

Inter-school teaching platforms

Assessment algorithms

S2S teaching platforms

Task-assignment algorithms

Teacher-assignment algorithms

Instruction becomes project performance- and portfolio-based instead of traditional assessments. 5

Algo-generated lessons

65% of today's grade school kids will end up at jobs that haven't been invented yet

United States Department of Labor: Futurework – Trends and Challenges for Work in the 21st Century

http://imm.iit.demokritos.gr/wp-content/uploads/2022/02/Distinctions_2005-2022.pdf

Classrooms in 2051 | SpringerLink https://link.springer.com/chapter/10.1007/978-3-030-77610-7_4

SCHOOLS OF THE FUTURE
https://rcepunesco.ae/ar/KnowledgeCorner/WorkingPapers/WorkingPapers/Schools%20of%20the%20Future_%20Sample%202.pdf

Innovative Learning Environments (ILE)
https://www.oecd.org/education/ceri/DEU.THU.003.%20Finalwihcover.pdf

The case for 21st-century learning
https://www.oecd.org/general/thecasefor21st-centurylearning.htm

OECD Learning Framework 2030 https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf

Future of Education and Skills 2030
https://www.oecd.org/education/2030-project/

Schools of the Future: Defining New Models of Education for the Fourth Industrial Revolution
https://www.weforum.org/reports/schools-of-the-future-defining-new-models-of-education-for-the-fourth-industrial-revolution/

How can we prepare students for the Fourth Industrial Revolution? 5 lessons from innovative schools around the world
https://www.weforum.org/agenda/2020/02/schools-of-the-future-report-2020-education-changing-world/?DAG=3&gclid=CjwKCAjwqJSaBhBUEiwAg5W9p9oCbL_Bo15PM-TOWuvmajvaLP4aoV3jniG5U20SVRf46k7rEfvijBoCrgsQAvD_BwE

Ευχαριστώ για την προσοχή σας

Any questions?

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