

# An online learning environment for high-ability students aimed at narrowing the achievement gap in Greece: **An emerging example of a best practice**

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# Home of CTY Greece



# Who We Are

## FOR STUDENTS

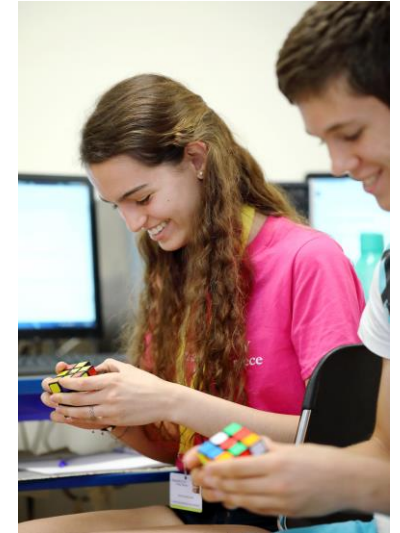
We offer students with high academic skills the opportunity to reach their academic potential through extracurricular programs

## FOR TEACHERS

We offer teacher training workshops in order to disseminate our best teaching practices



# CTY Greece academic extra-curricular & teacher training programs



# An Online Learning Environment



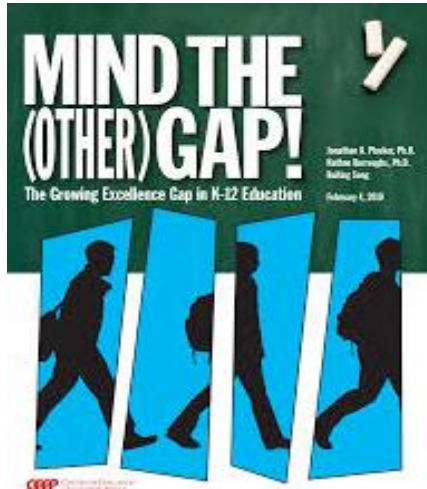
## AIM

- To reduce the achievement gaps of advanced learners ensuring that no high-ability student across the country is left behind

## HOW

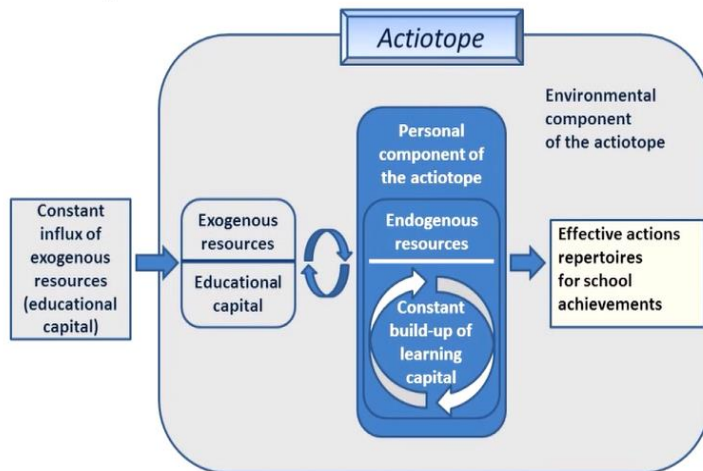
- By providing an abundance of **engaging learning resources** and **broad accessibility** to a newly-developed **online enrichment environment**.

# Underlying premises of our online enrichment program design



Jonathan Plucker

Actiotope's environment

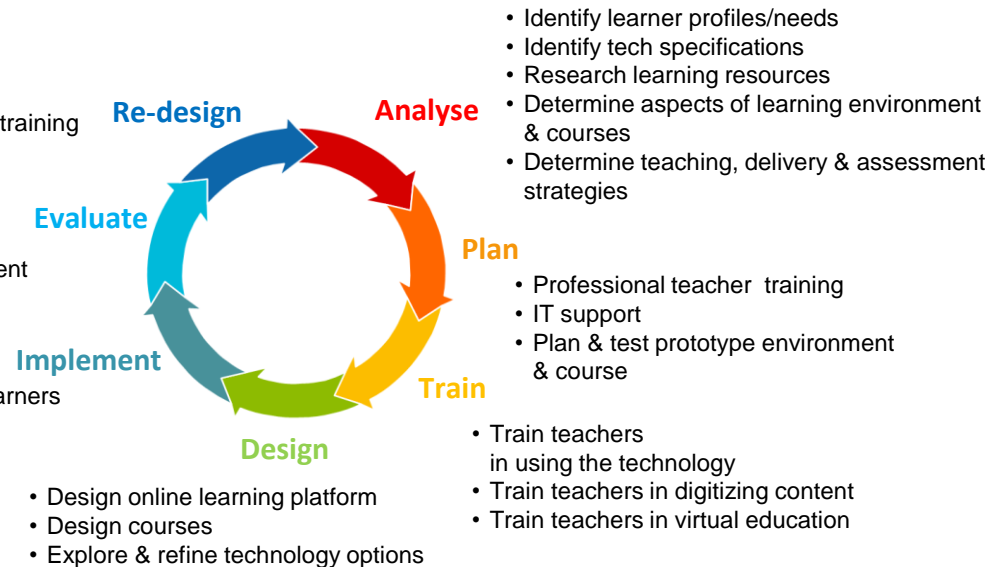


Albert Ziegler

- Carry out system improvements
- Design specific re-training

- Evaluate learning
- Evaluate engagement
- Evaluate problems

- Provide tools for learners
- Conduct delivery & assessment





# The educational landscape of Greece & the Covid-19 pandemic



# Factors deepening achievement gaps in Greece

**2010:  
Severe economic crisis**

**2020:  
Covid-19 pandemic crisis**

**CTY GREECE  
ENRICHMENT  
PROGRAMS**



**DANGER**

- true educational equity
- equality of opportunity
- social justice
- holding back a growing number of high-ability, high-potential children

**COMPREHENSIVE  
INTERVENTIONS**



# How has CTY Greece been building a community of advanced learners till now



# An online enrichment program aimed at narrowing the achievement gap

## Underlying design principles of the program:

- Equity
- Fairness in education
- Equal access to learning opportunities
- Preserving the quality and characteristics of F2F CTY Greece programs (innovation, engagement, interactivity, learning-by-doing, etc.)
- Greater equality in educational achievement

## Requirements and affordances of the program:

- Basic technology and infrastructure available in the majority of Greek households
- Capitalizes on the dedication and passion of teachers
- Minimizes costs
- Offers challenges, inspires learning, empowers self-esteem
- Eliminates distances

# Characteristics of the online learning system

- **Supports** elementary and high school students
- **Serves** different learning styles, preferences and needs in terms of:
  - **duration** (2-week courses with daily contact, 10-week courses with weekly contact, 12 week courses with minimal contact)
  - **method of delivery** (synchronous or a-synchronous)
  - **domain** (STEM & Humanities)
  - **abundance of learning resources**
- All of the courses offer **in-depth learning experiences** within an **inspiring, encouraging** and **appealing** environment and **enthusiastic teachers** who bring in the CTY spirit
- **Community building activities** incorporated in every course

# Technological Characteristics

## Low-cost infrastructure:

- **Google Meet** used for synchronous sessions
- Use of Meet whiteboard, polls, break-out rooms
- **Open-source LMS** (Moodle platform) for asynchronous material (homework, quizzes, assignments, final exams)

The screenshot shows a Google Meet interface. On the left, a presentation slide titled "All about antibiotics" is displayed. The slide content includes:

- Development of Antibiotics:** The development of a successful and safe antibiotic must proceed through several steps. The entire drug development pipeline can take anywhere between 10 and 20 years, from discovery of a potential antibiotic to its release for use in humans.
- 1. Discovery and Characterisation:** Scientists test a range of compounds from plant, animal, fungal sources for their effects on different bacteria.
- 2. Pre-clinical Testing:** Compounds showing promising results in laboratory experiments undergo more tests before they can be tried in humans. It focuses on evaluating the efficacy of the drug in a "real" infection (putting on animals) and the drug's adverse test effects.
- 3. Clinical Trials:** This stage includes testing of the drug to humans, after the authorization of the FDA. This procedure is separated in 3 stages:
  - (1) Give doses of the drug to a small number (people or animal) of healthy people.
  - (2) Test groups of people: healthy individuals and a disease group (used to test efficacy and dosage).
  - (3) Clinical trials on hundreds to thousands of patients. In this phase, the new drug is compared with existing drugs.
  - (4) New drugs approved by the FDA tested in large numbers (usually thousands) of patients, to find rare side-effects.

On the right, a grid of participants is visible, including names like "Andreas Dots", "Madona Adamant", "Isabel Kariakou", "Konstantinos", "George Mithras", and "Makris Chrysis".

The screenshot shows a Moodle LMS course page. The URL is [online.cty-greece.gr/cms/course/view.php?id=71](https://online.cty-greece.gr/cms/course/view.php?id=71). The page title is "Μάθημα 2: Επιστήμη ή Υπερδύναμη? Part 1".

On the right side, there is a large graphic with the text "SUPERHERO SCIENCE" and various science-related icons (atom, microscope, DNA, spider, etc.).

Below the graphic, the following text is displayed:

Παρουσίαση Μάθημα 2: Επιστήμη ή Υπερδύναμη Μέρος Α

Αγαπημένοι μου CTY Υπερήρωες,  
Αυτή είναι η παρουσίαση που θα μοιραστώ μαζί σας σήμερα στο μάθημα μας στην ενότητα Επιστήμη ή Υπερδύναμη Μέρος Πρώτο.  
Ανυπομονώ να σας δω από κοντά!  
Κ. Αλεξάνδρα

Συνδέσεις Ομάδων Μάθημα 2

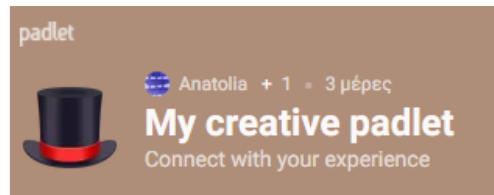
- 1. Room Ironman: <https://meet.google.com/ybh-boyx-fbi>
- 2. Room Batman: <https://meet.google.com/tde-tqnn-cdi>
- 3. Room Spiderman: <https://meet.google.com/syf-fdyx-jit>
- 4. Room Wonder Woman: <https://meet.google.com/qfs-ijpt-xjv>



# Technological characteristics

## Low-cost infrastructure:

- **PowerPoint** presentations
- **Word** and **PDF** documents
- Third-party **open source tools** such as Padlet, Kahoot, etc. used as gamification and formative assessment tools to enhance student engagement and check for understanding



Day 4 - Skin muscles and bones

Icebreaker

'Lost in Space'

1. imagine that you are living in a space station. All of a sudden, the space station malfunctions and you have to evacuate.
2. share your answers in the chatbox, explaining why they chose those five items.

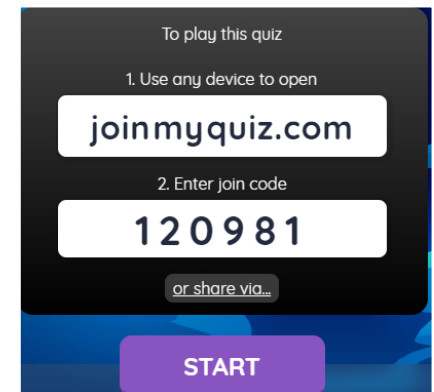
Session 1

- Biodigital human
- Skeletal System
- A new way to create bone

Bones Kahoot!



Label the skeletal system



# Introducing Katerina

- Lives on the island of Mytiline
- Comes from low-income family
- COVID closure for several months
- Keenly interested in biology
- Became eligible for the CTY Greece enrichment program last October and is now enrolled in the Bioengineering class

## Compared to her school classmates Katerina is being offered:

- 90 mins of contact with her instructor and online peers per week
- A plethora of learning resources
- In-depth understanding of concepts that would not have been available till university
- Ability to meet online and exchange ideas with like-minded students



- ▣ **Keenly motivated to progress through her course**
- ▣ **Interested to enroll in more online courses**



**She will be more successful with regards to the development of her gifts and talents than her schoolmates**

# Introducing Andreas

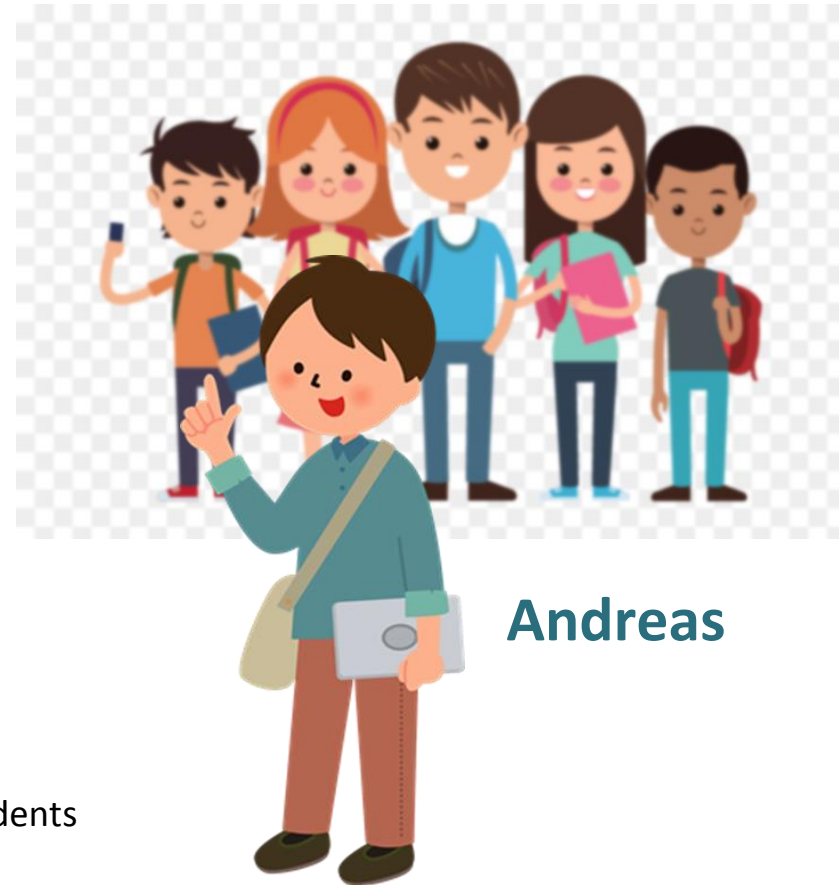
- From a village close to the city of Xanthi
- His parent came to Greece as immigrants when he was 7
- His 7th grade Math teacher recognized his above-average performance and his acute mathematical mind
- He scored excellently on the Math section of the CTY Greece exam
- He enrolled and has completed the Counting without Counting class

## Compared to his school classmates Andreas was offered:

- 4-hours contact with his instructor and online peers per day for two weeks in the summertime
- In-depth understanding of concepts that would not have been available till he was in college
- An abundance of additional online learning resources
- Ability to solve Math problems and exchange ideas with like-minded students



- ❏ He is now eager to enroll in other online Math courses
- ❏ Interested to enroll in the Cryptology F2F summer course



**Andreas**

**He will be more successful with regards to the development of his gifts & talents compared to his schoolmates**

# These are just two of our many online CTY students

**Katerina**





**Andreas**




 Sets and lists of numbers

Wednesday 8 July


 BrainTeaser3

 Good Colorings

Thursday 9 July


 BrainTeaser4

 GameTheory

 What is your favorite theorem/proof/ book/movie related to Mathematics?

Friday 10 July

 A betting strategy

 Quiz - CodeName:CheckStudentsAreStillLoggedInAfterThreeHours

This is the first Quiz to get us started! It's role is that of an "Initial Diagnostic Test", i.e. to see how much you know before we get started.

The concept of "grade" does not exist in this Universe, so enjoy this set of questions that has been insightfully chosen to give you a taste of the types of problems you'll learn to handle by the end of two weeks!

Ready, set, go....!

 Exit ticket


Day 4 - Skin muscles and bones

Icebreaker


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Session 1

 Biodigital human

 Skeletal System

 A new way to create bone

Bones Kahoot!



 Label the skeletal system

**Taking into account their family income both Katerina & Andreas received a full scholarship by CTY Greece**



**Accessibility  
for all**



# What has the impact been so far

- ✓ **We're succeeding!**
- ✓ The program is becoming popular among low-income families and is reaching rural areas
- ✓ More and more students are applying for scholarships
- ✓ We are becoming a program without borders
- ✓ Students like Katerina and Andreas would not have had access to the learning resources, support and motivation offered to them through the online CTY program
- ✓ For advanced learners who have the ability to make a difference for themselves, over time this benefit will have a lasting impact on their families, schools, communities and on our shared future

# NARROW that gap...CHANGE student lives



# Contact Us

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# Useful Resources



## RESOURCES

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