

Postgraduate Certificate

Gamification and other Innovative
Methodologies in Mathematics



Postgraduate Certificate Gamification and other Innovative Methodologies in Mathematics

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 9 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/education/postgraduate-certificate/gamification-innovative-methodologies-mathematics

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01

Introduction

In recent years, educational systems have incorporated new methodologies that promote learning while making it fun. Therefore, it is now common to find teachers who use Gamification or other methods such as Flipped Classroom, in order to create positive experiences around knowledge. In this way, the professional who teaches mathematics has managed to break down the main barriers that students have in the study of their subject. In this line, TECH provides an advanced program that goes into the development of didactic units and sessions based on games and new attractive alternatives to teach algebra, geometry or statistics in High-School. All in a 100% online format, accessible 24 hours a day from any electronic device with internet connection.



“

Thanks to TECH you will be up to date with the latest news on the use of Gamification and other Innovative Methodologies in Mathematics”

In a world where technology, video games and leisure prevail, knowledge is also acquired through fun and different experiences in the classroom. This educational trend is supported by numerous scientific studies that have demonstrated the great potential of the great potential of Gamification in the learning process.

In this sense, it is key that teaching professionals master the structures of such game-based activities and new methodologies and adapt them to their subjects. For this reason, TECH has created this 100% online program that offers teachers the necessary keys to be able to design, from start to finish, more innovative didactic units.

This is an advanced program, which will take students over 270 hours to learn about the mechanics of the game, the advantages of its use in mathematics classes in secondary education and the inclusion of resources such as increased reality to carry out attractive lessons. All of this is complemented by numerous additional pedagogical materials that provide a much more practical vision with examples of real situations, which graduates will be able to take to their educational work.

This is an excellent opportunity for professionals to progress in their sector and their performance through a Postgraduate Certificate that they can take wherever and whenever they wish. All you need is an electronic device with an internet connection with which you can access this program at any time of the day or night. Therefore, without the need for classroom attendance or classes with Fixed schedules, graduates will counts with the Freedom of being to self-manage their Studies time and make their daily responsibilities compatible with a quality university program.

This **Postgraduate Certificate in Gamification and other Innovative Methodologies in Mathematics** contains the most complete and up-to-date program on the market.

The most important features include:

- ♦ The development of practical cases presented by experts in Gamification and other Innovative Methodologies in Mathematics and High School
- ♦ The graphic, schematic and practical contents of the book provide technical and practical information on those disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning.
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



Excel as a teacher by applying mathematical game activities in your day-to-day life in your secondary education classes”

“

Boost the speed of mathematical thinking of your students through a 100% online qualification”

The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

Thanks to this program you will be able to see the multiple advantages.

With this Postgraduate Certificate you will be able to design a gamified activity from start to finish following the curricular guidelines of mathematics.



02

Objectives

The main objective of this Postgraduate Certificate is to offer the professional teacher multiple innovative methodologies to improve the learning of mathematics in their secondary school students. To achieve this goal, the specialized team that teaches this program has developed an advanced syllabus, complemented with numerous additional pedagogical materials that provide a much more practical vision.





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In only 6 weeks you will be able to improve your teaching skills and create didactic units based on the most effective Gamification”



General Objectives

- Know the different types of innovative learning methodologies in education applied to mathematics
- Know how to apply the different types of innovative learning methodologies in education to Mathematics
- Know how to discern which is the most appropriate innovative learning method for a group of students studying mathematics in High School
- Learn to design a didactic unit using the different methodologies of innovation in mathematics education



Do you want to learn the Flipped Classroom methodology and bring it successfully to your math classes? Enroll now and immerse yourself in it with this program”





Specific Objectives

- ♦ Understand the role of play in childhood
- ♦ Understand the role of play in adolescence
- ♦ Discern between the role of play in childhood and adolescence
- ♦ Learn what gamification in mathematics is
- ♦ Know about the advantages that gamification can bring to the mathematics learning process
- ♦ Learn the different elements of gamification applied to mathematics
- ♦ Know how to use gamification elements to transform a traditional mathematics activity into a gamified mathematics activity
- ♦ Learning to apply gamification to mathematics
- ♦ Know how to extrapolate an example of a gamified mathematical activity to any mathematics content
- ♦ Know how to design a gamified activity with content from the mathematics curriculum
- ♦ Be aware of the different ICT resources related to the gamification of mathematics
- ♦ Learn about the origins of games in humanity
- ♦ Be aware of the different ICT resources for Mathematics Portfolios/ e-Portfolios
- ♦ Be aware of the different ICT resources for cooperative learning applied to mathematics
- ♦ Be aware of the different ICT resources for mathematics comprehension projects
- ♦ Learn to use other alternative innovative mathematics methodologies
- ♦ Know what the Flipped Classroom is
- ♦ Know about the advantages of the Flipped Classroom applied to mathematics
- ♦ Know about the disadvantages of the Flipped Classroom applied to mathematics
- ♦ Learn how to apply the Flipped Classroom to mathematics
- ♦ Learning to apply the digital mural to mathematics
- ♦ Know how to design a mathematics teaching unit

03

Course Management

This educational institution has brought together a select team of teaching professionals with a great vocation for teaching and with extensive knowledge on the inclusion of new methodologies. In this way, students are guaranteed to have access to the most up to date information from authentic experts in Gamification and other Innovative Methodologies in Mathematics.





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You will have at your disposal teachers with extensive experience in educational teaching, versed in new educational methodologies”

International Guest Director

Doctor Jack Dieckmann has been an outstanding Senior Mathematics Advisor, who has focused on the revision of curricular materials to strengthen language development in Mathematics. In fact, his expertise has encompassed the evaluation and improvement of educational resources, supporting the integration of effective classroom practices. In addition, he has held the position of Director of Research at Stanford University, where he has been dedicated to documenting the effectiveness of learning opportunities offered by Youcubed, including Jo Boaler's online courses on mathematical mindsets and other research-based materials.

In addition, throughout his career, he has held key roles at renowned institutions. Therefore, he has served as Associate Director of Curriculum at the Center for Assessment, Learning and Equity (SCALE), where he has led the Mathematics team in the development of performance assessments, demonstrating his ability to innovate in educational assessment and apply advanced teaching techniques.

In this sense, at the international level, Dr. Jack Dieckmann has been recognized for his impact on mathematics education, through his scientific participation in multiple activities. He has also obtained significant merits in his field, participating in conferences and consultancies in countries such as China, Brazil and Chile. As such, his work has been crucial for the implementation of best practices in mathematics teaching, and his experience has been instrumental in advancing mathematics education globally.

In this way, his further research has focused on "language for mathematical purposes", especially for students of English as a second language. In turn, he has continued to contribute to mathematics education through his work at Youcubed, as well as his consulting activities globally, demonstrating his position as an outstanding leader in the field.



Dr. Dieckmann, Jack

- Director of Research at Youcubed at Stanford University, San Francisco, United States
- Associate Director of Stanford's Center for Assessment, Learning and Equity (SCALE)
- Instructor at the Stanford Teacher Education Program (STEP)
- International Teaching Consultant in countries such as China, Brazil and Chile
- Ph.D. in Mathematics Education at Stanford GSE in 2009

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Thanks to TECH, you will be able to learn with the best professionals in the world”

Management



Mr. Jurado Blanco, Juan

- ♦ Secondary School Teacher and Industrial Electronics Expert
- ♦ Mathematics and Informatics teacher in Compulsory Secondary Education at Santa Teresa de Jesús School in Vilanova and Geltrú.) Spain
- ♦ Expert in High Abilities
- ♦ Industrial Technical Engineer with Specialization in Industrial Electronics



Professors

D. De la Serna, Juan Moisés

- ♦ Psychologist and Writer expert in Neurosciences
- ♦ Writer specializing in Psychology and Neurosciences
- ♦ Author of the Open Chair in Psychology and Neurosciences
- ♦ Scientific disseminator
- ♦ PhD in Psychology
- ♦ Degree in Psychology. University of Seville
- ♦ Master's Degree in Neurosciences and Behavioral Biology Pablo de Olavide University, Seville
- ♦ Expert in Teaching Methodology. La Salle University
- ♦ University Specialist in Clinical Hypnosis, Hypnotherapy. National University of Distance Education - UNED
- ♦ Diploma in Social Graduate, Human Resources Management, Personnel Administration. University of Seville
- ♦ Expert in Project Management, Administration and Business Management. Federation of Services U.G.T
- ♦ Trainer of Trainers. Official College of Psychologists of Andalusia

Dr. Sánchez García, Manuel

- ♦ Teacher of Compulsory Secondary Education
- ♦ Mathematics teacher in Compulsory Secondary Education at Santa Teresa de Jesús School in Vilanova i la Geltrú
- ♦ Vocational Training and Language Teaching
- ♦ Health Biology Specialty
- ♦ Master's Degree in Teacher Training for Compulsory Secondary and High School Education
- ♦ Degree in Biology

04

Structure and Content

The teaching professional requires more innovative methodologies to attract students and improve their learning. In this sense, TECH provides in this Postgraduate Certificate the most up to date didactics, mainly based on the inclusion of Gamification in the teaching of mathematics. To achieve this goal, it also provides numerous multimedia content that can be accessed comfortably from any device with internet connection and at any time of the day.



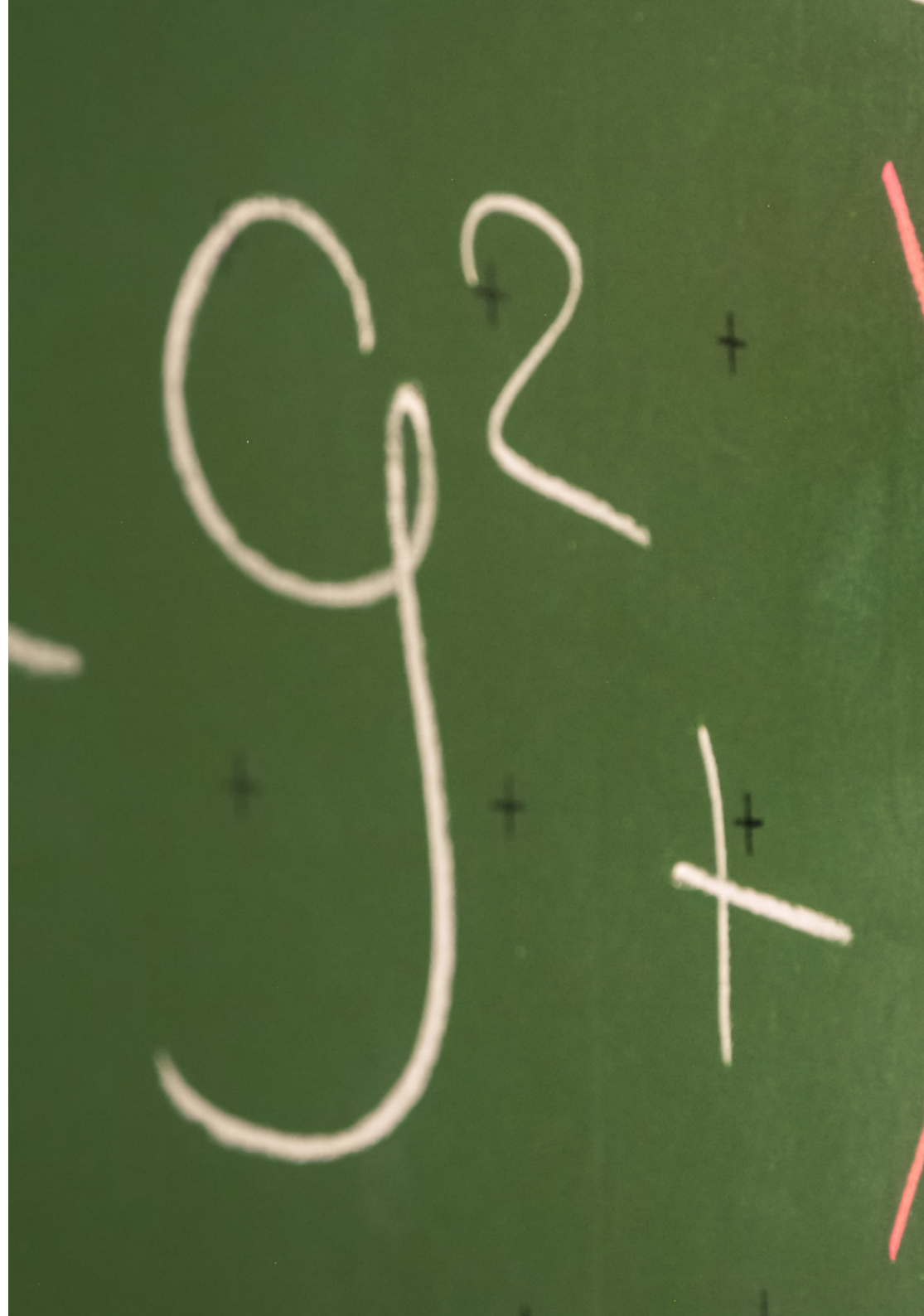


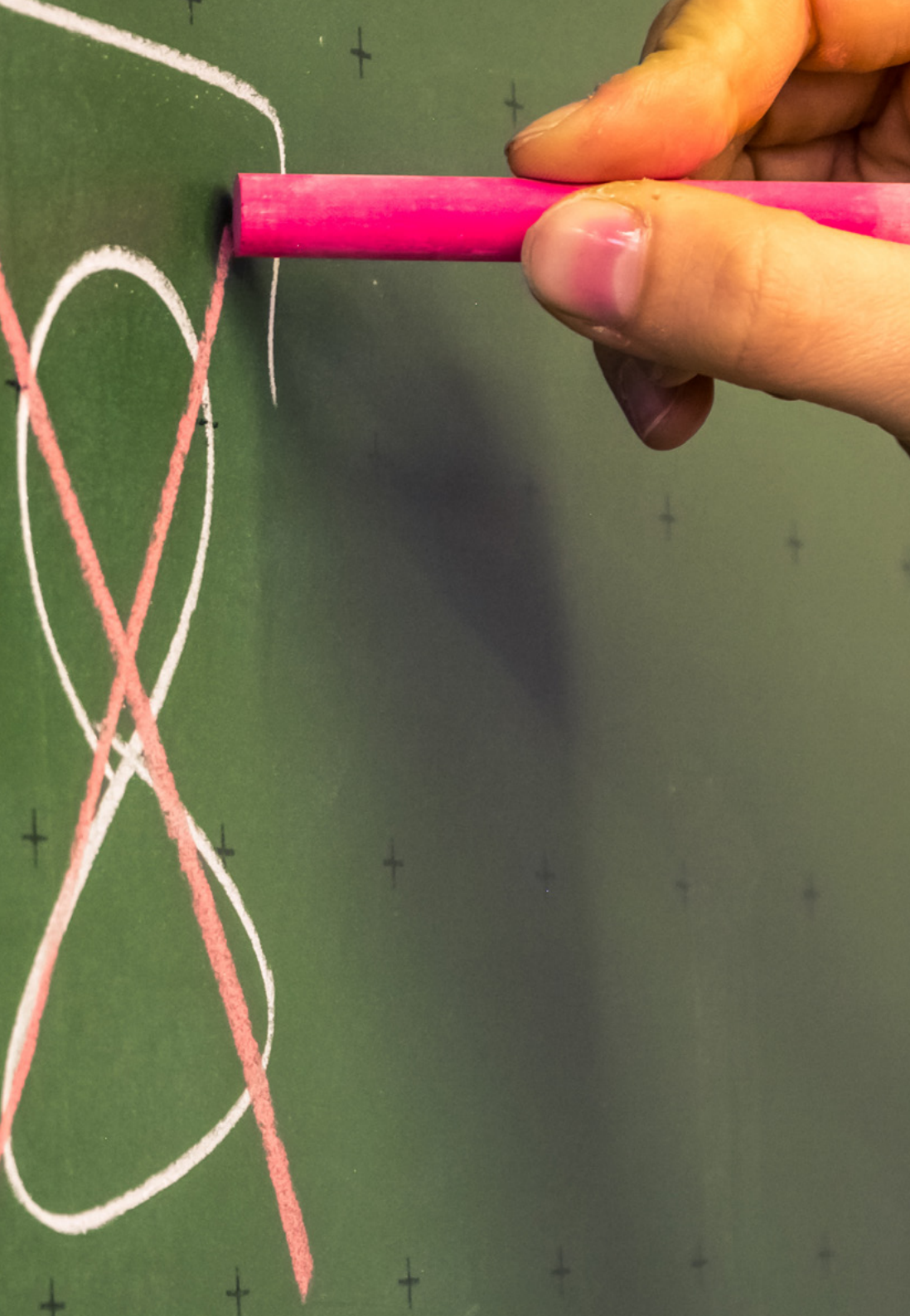
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An advanced, 100% online curriculum that will allow you to incorporate the game effectively into your mathematics lessons”

Module 1. Gamification in Mathematics

- 1.1. Play
 - 1.1.2. Play Since the Middle Ages
- 1.2. Games in Childhood
 - 1.2.1. Areas Developed by Games
- 1.3. Games in Adolescence
 - 1.3.1. Introduction
 - 1.3.1.1. Elements which make Games are so Important for Adolescents
 - 1.3.1.2. Adolescents and Video Games
 - 1.3.1.3. Better Hand-Eye Coordination
 - 1.3.1.4. Faster Thinking, Sharper Memory
 - 1.3.1.5. Greater Creativity
 - 1.3.1.6. Promote Learning
 - 1.3.2. The Video Game as an Educational Tool
 - 1.3.2.1. When to Act When is Video Gaming Detrimental?
- 1.4. Gamification
 - 1.4.1. Motivation and "Continuous Feedback"
 - 1.4.1.1. Personalized Education
 - 1.4.2. Societal Change
 - 1.4.3. Elements of Gamification
- 1.5. Gamification of Mathematics
 - 1.5.1. Representation of all Types of Functions
 - 1.5.2. Solving 1st and 2nd Degree Equations
 - 1.5.3. Solving Systems of Equations
- 1.6. Application of Gamification in Mathematics (Part I)
 - 1.6.1. How Gamification Works
 - 1.6.2. Gamification Model
 - 1.6.3. Purpose of Gamification
 - 1.6.4. Padlocks
 - 1.6.5. Analysis of Gamification Elements
- 1.7. Application of Gamification in Mathematics (Part II)
 - 1.7.1. Introduction to Augmented Reality
 - 1.7.2. Creating Auras
 - 1.7.3. Mobile Configuration





Module 2. Other Innovative Methodologies in Mathematics

- 2.1. Flipped Classroom Applied to Mathematics
 - 2.1.1. The Traditional Class
 - 2.1.2. What Is the Flipped Classroom?
 - 2.1.3. Advantages of the Flipped Classroom applied to Mathematics
 - 2.1.4. Disadvantages of the Flipped Classroom applied to Mathematics
 - 2.1.5. Example of a Flipped Classroom applied to Mathematics
- 2.2. Peer Mentoring in Mathematics
 - 2.2.1. Definition of Mentoring
 - 2.2.2. What is Peer Mentoring?
 - 2.2.3. Advantages of Peer Mentoring in Mathematics
 - 2.2.4. Disadvantages of Peer Mentoring in Mathematics
 - 2.2.5. Example of Peer Mentoring Applied to Mathematics
- 2.3. Conceptual Jigsaw Puzzles applied to Mathematics
 - 2.3.1. Definition of Jigsaw Puzzles
 - 2.3.2. What is a Conceptual Jigsaw Puzzle?
 - 2.3.3. Advantages of Conceptual Jigsaw Puzzles in Mathematics
 - 2.3.4. Disadvantages of Conceptual Jigsaw Puzzles in Mathematics
 - 2.3.5. Example of Conceptual Jigsaw Puzzle Applied to Mathematics
- 2.4. Digital Murals applied to Mathematics
 - 2.4.1. Definition of a Mural
 - 2.4.2. Digital Murals in Mathematics
 - 2.4.3. Tools for Making Digital Murals in Mathematics
 - 2.4.4. Advantages of Digital Murals in Mathematics
 - 2.4.5. Disadvantages of Digital Murals in Mathematics
 - 2.4.6. An Example of a Digital Mural applied to Mathematics

05

Methodology

This training program offers a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





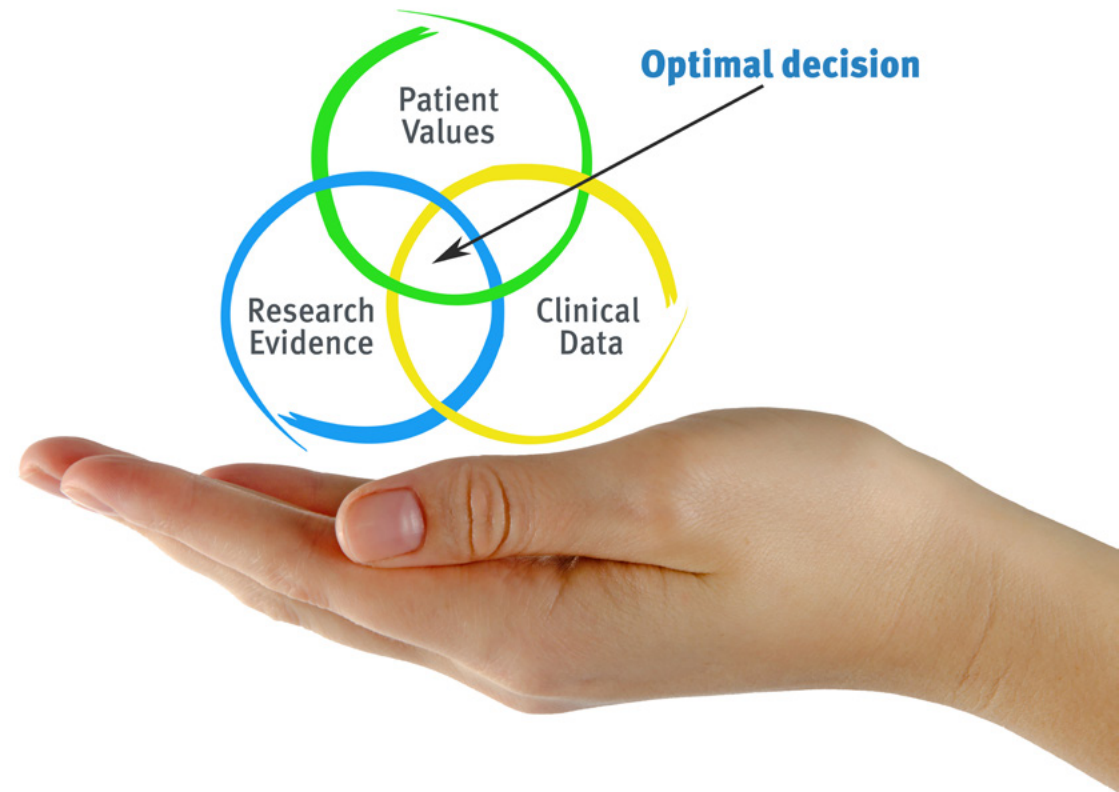
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Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH Education School we use the Case Method

In a given situation, what should a professional do? Throughout the program students will be presented with multiple simulated cases based on real situations, where they will have to investigate, establish hypotheses and, finally, resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method.

With TECH, educators can experience a learning methodology that is shaking the foundations of traditional universities around the world.



It is a technique that develops critical skills and prepares educators to make decisions, defend their arguments, and contrast opinions.

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Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”

The effectiveness of the method is justified by four fundamental achievements:

1. Educators who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process is solidly focused on practical skills that allow educators to better integrate the knowledge into daily practice.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life teaching.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

Our University is the first in the world to combine case studies with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, which represent a real revolution with respect to simply studying and analyzing cases.



Educators will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 85,000 educators with unprecedented success in all specialties. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialist educators who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Educational Techniques and Procedures on Video

TECH introduces students to the latest techniques, with the latest educational advances, and to the forefront of Education. All this, first-hand, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive multimedia content presentation training Exclusive system was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises: so that they can see how they are achieving your goals.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



06

Certificate

The Postgraduate Certificate in Gamification and other Innovative Methodologies in Mathematics guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”

This program will allow you to obtain your **Postgraduate Certificate in Gamification and other Innovative Methodologies in Mathematics** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

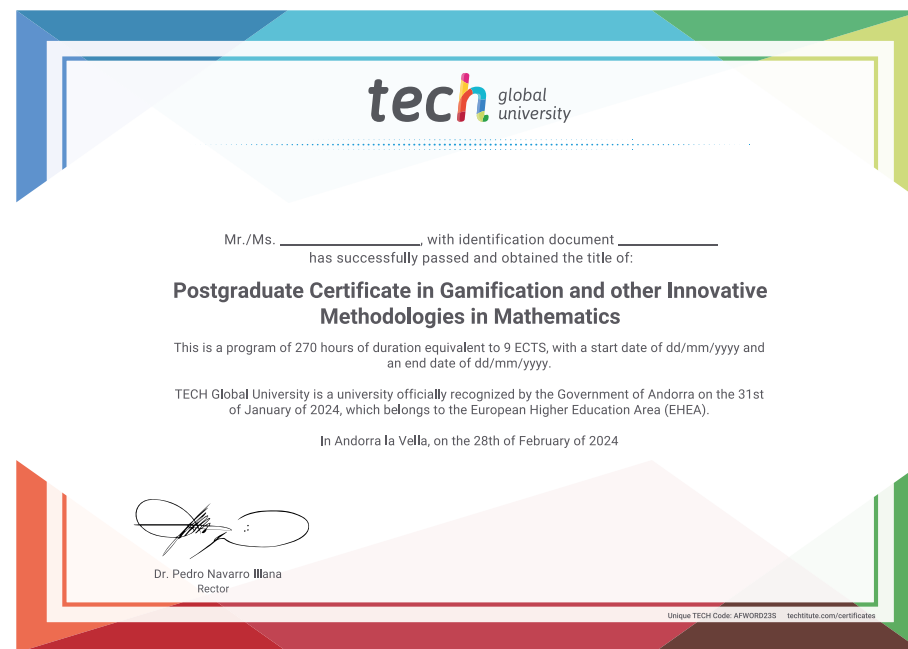
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Gamification and other Innovative Methodologies in Mathematics**

Modality: **online**

Duration: **6 weeks**

Accreditation: **9 ECTS**





Postgraduate Certificate

Gamification and other Innovative Methodologies in Mathematics

- » Modality: online
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Postgraduate Certificate
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