

# Postgraduate Diploma 3D Design and Printing in Education





## Postgraduate Diploma 3D Design and Printing in Education

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/pk/education/postgraduate-diploma/postgraduate-diploma-3d-design-printing-education](http://www.techtute.com/pk/education/postgraduate-diploma/postgraduate-diploma-3d-design-printing-education)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 16*

05

Methodology

---

*p. 20*

06

Certificate

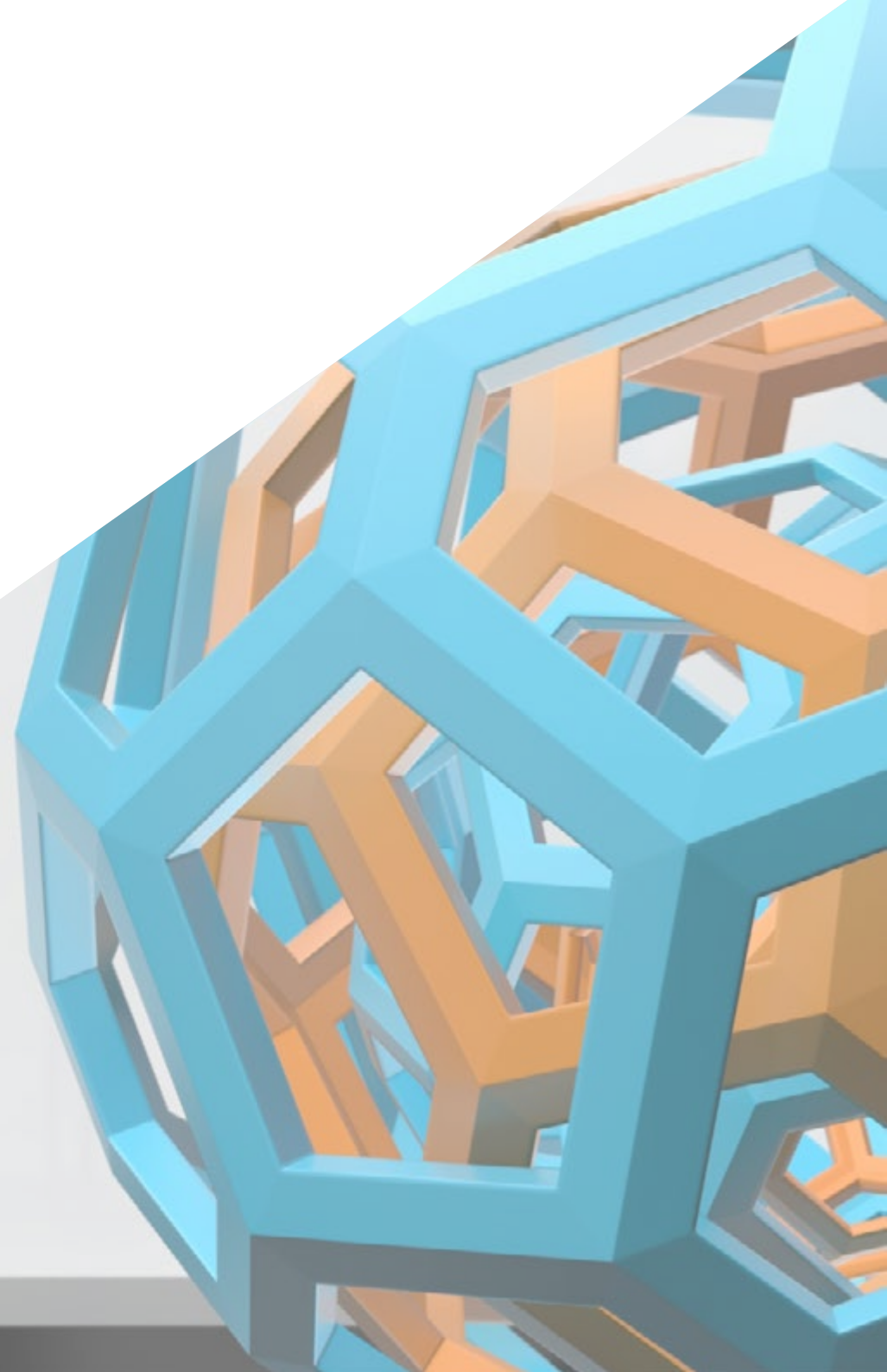
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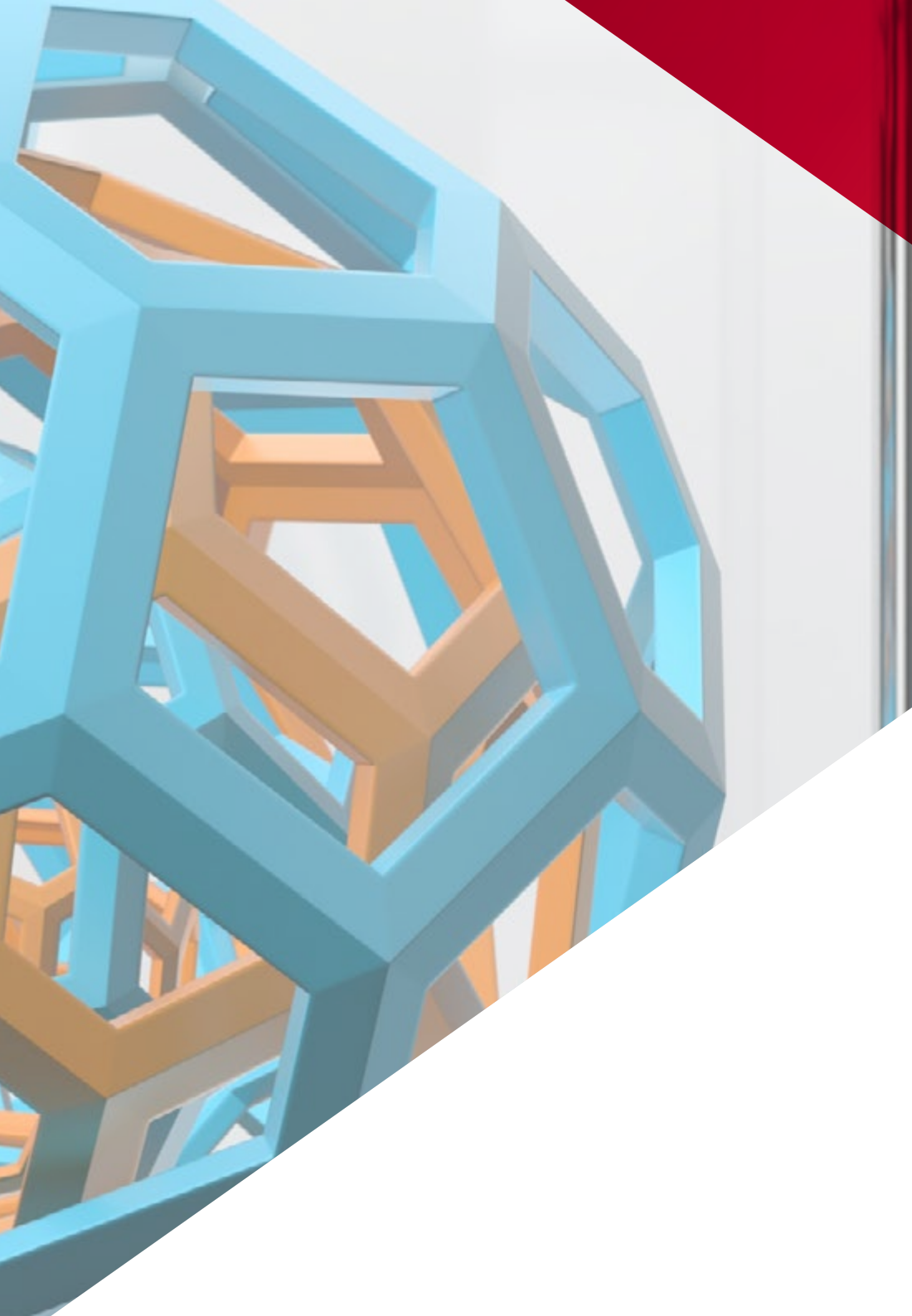
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# 01

# Introduction

The implementation and use of 3D printers in education has allowed students and teachers to develop innovative activities in the school environment, based on the versatility and multiple possibilities offered by this technology. Its use as an educational resource encourages the active participation of children, who enjoy and have fun at the same time that they learn conscientiously. However, it is a field that requires a series of specific technical knowledge, not only to master the necessary tools and equipment, but also to know how to transmit them through various teaching resources. For this reason, TECH has designed a 100% online program that will allow teachers to specialize in 3D design and printing in the classroom through a thorough mastery of Tinkercad and the main pedagogical techniques and strategies for teaching it.





“

*Would you like to be able to implement 3D printing and design work in your classes? With this TECH program, you will delve into the basics of this revolutionary technique with which your students will enjoy learning”*



Numerous studies carried out in the educational field have determined that the use of 3D technology in the classroom enhances the creative skills of students, while promoting knowledge in a multidisciplinary, entertaining and innovative way. An example of this is the use of 3D printers as a regular tool in the school environment, which has shown an increase in the degree of participation of children in the activities, as well as teamwork, capturing their attention and improving teaching through a real visualization of the different concepts (making topographic maps, designing instruments, layout of historical buildings, etc.).

In this type of contexts, the role of the teacher is key, since the use of the latest generation technology can be complex and frustrating for students. For this reason, and in order to promote education based on the inclusion of the most innovative and beneficial tools for learning, TECH has developed a program with which teachers can learn in detail the pedagogical guidelines to include in their curriculum the use of 3D printers. Through the principle of "if you can dream it, you can create it", you will work intensively on the knowledge of the main fundamentals of technology applied to training, with special emphasis on the mastery of Tinkercad as the software par excellence for the enhancement of neuroeducation through design and 3D printing.

All this 100% online and through 450 hours of the best theoretical, practical and additional content, which will be hosted in a comfortable and accessible state-of-the-art Virtual Campus. In addition, all of this material can be downloaded to any device with an internet connection, so that the student can consult it even after the program is completed. This will ensure the highest level of specialization that adapts not only to their needs, but also to the demands of Education 2.0.

This **Postgraduate Diploma in 3D Design and Printing in Education** contains the most complete and up-to-date program on the market. Its most notable features are:

- ♦ Case studies presented by experts in Education and Innovation
- ♦ The graphic, schematic, and practical contents with which they are created, provide techniques and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out 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



*A program that will reinforce your teaching quality and will give you the guidelines to develop as a first instance technology teaching coach"*

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*Are you interested in knowing what the 10 keys are to successfully gamify your classroom? Enroll in this Postgraduate Diploma and you will learn how to develop projects based on Robotics and Education"*

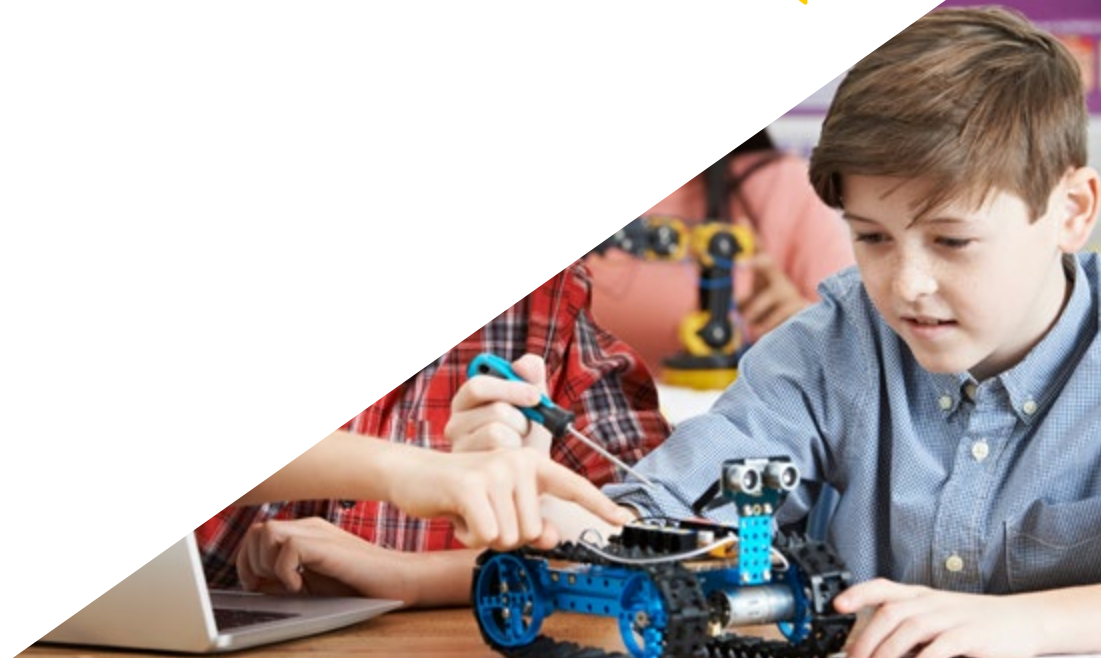
The program's teaching staff includes professionals from the sector who contribute their work experience to this program, as well as renowned specialists from leading societies and prestigious universities.

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 knowledge 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 throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

*You will work intensively in the knowledge of the main pedagogical techniques to promote educational skills through the use of different technologies in the classroom.*

*The best program on the current academic market to learn how to handle Tinkercad, from the basics to the creation of complex projects.*



# 02

# Objectives

The existence of 3D printers in the educational field and their daily use in the classroom is becoming more and more frequent. For this reason, and with the aim that the teacher can get the most out of this technology, TECH has developed this program to find in it all the theoretical and practical information you need for it. In this way, through 6 months of 100% online education, you will be able to work intensively on perfecting your skills in the use of different 3D tools, with special emphasis on the most effective teaching strategies for the transmission of knowledge to students of all ages.





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*Thanks to this Postgraduate Diploma you will be able to adapt the use of 3D printers to different fields: art, food, textile and jewelry, medicine, construction, education, etc”*



## General Objectives

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- ♦ Specialize teachers in the use of materials and methodologies that enhance motivation, creativity and innovation through educational robotics, programming and 3D printing
- ♦ Learn how to plan in a transversal and curricular way in order to incorporate new technologies and methodologies in the classroom
- ♦ Raise teachers' awareness of the importance of a transformation in education, motivated by the new generations



*You will work comprehensively on the strengthening of different types of intelligence through the creative design of educational projects based on 3D technology in the classroom"*





## Specific Objectives

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### Module 1. Fundamentals and Evolution of Applied Technology in Education

- ♦ Raise teachers' awareness of new educational trends and the direction of their role in education
- ♦ Provide knowledge of new information and communication technology skills.
- ♦ Train teachers to promote educational change within the classroom to create environments that improve student achievement
- ♦ Introduce learning theories related to Educational Robotics
- ♦ Understand the laws of robotics

### Module 2. 3D Design and Printing "If You Can Dream It, You Can Create It"

- ♦ Learning to balance the flow state between the difficulty of the challenge and the learner's abilities
- ♦ Know the importance of the digital skills for teachers
- ♦ Distinguish different complementary tools
- ♦ Learn about different robotic resources as alternatives in the classroom

### Module 3. Tinkercad: A Different Way of Learning Neuroeducation and Physical Education

- ♦ Acquire the methodology of work in educational robotics
- ♦ Transfer a new learning method to motivate students to research and entrepreneurship
- ♦ Know the relationship between Educational Robotics and the curriculum.
- ♦ Identify the different Arduino components



# 03

# Course Management

Both the direction and the teaching staff of this Postgraduate Diploma in 3D Design and Printing in Education will be in charge of a multidisciplinary team of specialists from different areas of Education and Technology, but who have in common the ability to perfectly master the tools of 3D design and printing. Thanks to this, they will be able to share with students the most exhaustive and innovative information, as well as the best strategies to instill in children an interest in these innovative techniques through the management of state-of-the-art educational projects.







“

*A unique opportunity to elevate your educational talent from the best teaching and technology professionals in today's academic environment"*

## Management



### Ms. Muñoz Gambín, Marina

- ♦ Teacher and Expert in Educational Technology
- ♦ Head of Educational Robotics and Programming at Robotuxc Academy for Kindergarten and Primary School
- ♦ Certified in Lego Education© methodology
- ♦ Degree in Early Childhood Education Teaching from CEU Cardenal Herrera University
- ♦ Educational Coach certified by the Alicante Chamber of Commerce
- ♦ Emotional Intelligence in the Classroom Trainer
- ♦ Neuroscience Teacher Training
- ♦ Expert in Neurolinguistic Programming certified by Richard Bandler
- ♦ Certified in Music Education as therapy

## Professors

### Ms. Gambín Pallarés, María del Carmen

- ♦ Social Worker and Family Therapist
- ♦ Systemic Family Therapist
- ♦ Social Worker
- ♦ Founder and director of "Educa Diferente" Positive Discipline Alicante.
- ♦ Family and teacher educator in Positive Discipline
- ♦ Lego Serious Play methodology facilitator.
- ♦ Coaching training for professionals

### Mr. Coccaro Quereda, Alejandro

- ♦ Specialist in Educational Robotics
- ♦ Expert in Educational Robotics, Design and 3D Printing
- ♦ Robotuxc Academy Robotics National Competition Challenges Specialist
- ♦ Certified in Lego Education© methodology
- ♦ Head of Educational Robotics, Design and 3D Printing for Primary and
- ♦ High School at Robotuxc Academy





# 04

## Structure and Content

Students who enroll in this program are guaranteed access to 450 hours of the most comprehensive, complete and innovative syllabus, which is supported by case studies based on real-life situations and high-quality additional material: detailed videos, research articles, complementary readings, images, dynamic summaries and much more. In this way, the teacher will be able to expand each section in a personalized way, adapting the Postgraduate Diploma to your requirements.







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*You will be able to implement to your academic strategies the best techniques to work effectively and dynamically the design in the classroom through Thingiverse"*

## Module 1. Fundamentals and Evolution of Applied Technology in Education

- 1.1. Aligning with HORIZON 2020
  - 1.1.1. Early Advances in ICT and Teacher Participation
  - 1.1.2. Horizon 2020 European Plan Progress
  - 1.1.3. UNESCO: ICT Skills for Teachers
  - 1.1.4. The Teacher as a Coach
- 1.2. Pedagogical Foundations of Educational Robotics
  - 1.2.1. MIT - a Pioneering Center of Innovation
  - 1.2.2. Jean Piaget - Forerunner of Constructivism
  - 1.2.3. Seymour Papert - Transformer of Technology Education
  - 1.2.4. George Siemens' Connectivism
- 1.3. Regularization of a Technological-legal Environment
  - 1.3.1. Ethical Agreement on Applied Robotics European Report
- 1.4. Importance of the Curricular Implementation of Robotics and Technology
  - 1.4.1. Educational Skills
    - 1.4.1.1. What Is a Skill?
    - 1.4.1.2. What Is an Educational Skill?
    - 1.4.1.3. Core Skills in Education
    - 1.4.1.4. Application of Educational Robotics to Educational Skills
  - 1.4.2. STEAM. New learning Approach Innovative Education to Train Future Professionals
  - 1.4.3. Technological Classroom Designs
  - 1.4.4. Creativity and Innovation Included in the Curricular Model.
  - 1.4.5. The Classroom as a MAKERSPACE
  - 1.4.6. Critical Thinking
- 1.5. Another Way of Teaching
  - 1.5.1. Why Should we Innovate in Education?
  - 1.5.2. Neuroeducation; Emotion as Success in Education
    - 1.5.2.1. Some Neuroscience to Understand How do we Produce Learning in Children?
  - 1.5.3. The 10 Keys to Gamify your Classroom
  - 1.5.4. Educational Robotics: The Flagship Methodology of the Digital Age
  - 1.5.5. Advantages of Robotics in Education
  - 1.5.6. Design with 3D Printing and its Impact on Education
  - 1.5.7. Flipped Classroom and Flipped Learning
- 1.6. Gardner and Multiple Intelligences
  - 1.6.1. The 8 Types of Intelligence
    - 1.6.1.1. Logical-Mathematical Intelligence
    - 1.6.1.2. Linguistic Intelligence
    - 1.6.1.3. Spatial Intelligence
    - 1.6.1.4. Musical Intelligence
    - 1.6.1.5. Body and Kinesthetic Intelligence
    - 1.6.1.6. Intrapersonal Intelligence
    - 1.6.1.7. Interpersonal Intelligence
    - 1.6.1.8. Naturalistic Intelligence
  - 1.6.2. The 6 Keys to Apply the Different Intelligences
- 1.7. Knowledge Analytical Tools
  - 1.7.1. Applying BIG DATA in Education

**Module 2. 3D Design and Printing "If You Can Dream It, You Can Create It"**

- 2.1. Origins and Development of 3D Design and 3D Printing
  - 2.1.1. What Is It?
  - 2.1.2. NMC Horizon Project EDUCAUSE Learning
  - 2.1.3. Evolution of 3D Printing
- 2.2. 3D Printing. Which Ones Can Be Found?
  - 2.2.1. SLA - Stereolithography
  - 2.2.2. SLS - Selective Laser Sintering
  - 2.2.3. Injection
  - 2.2.4. FDM - Fused Material Deposition
- 2.3. What Types of Materials Are Available for 3D Printing?
  - 2.3.1. Abs
  - 2.3.2. Pla
  - 2.3.3. Nylon
  - 2.3.4. Flex
  - 2.3.5. Pet
  - 2.3.6. Hips
- 2.4. Applications in Different Fields
  - 2.4.1. Art
  - 2.4.2. Feeding
  - 2.4.3. Textile and Jewelry
  - 2.4.4. Medicine
  - 2.4.5. Construction
  - 2.4.6. Education

**Module 3. Tinkercad: A Different Way of Learning Neuroeducation and Physical Education**

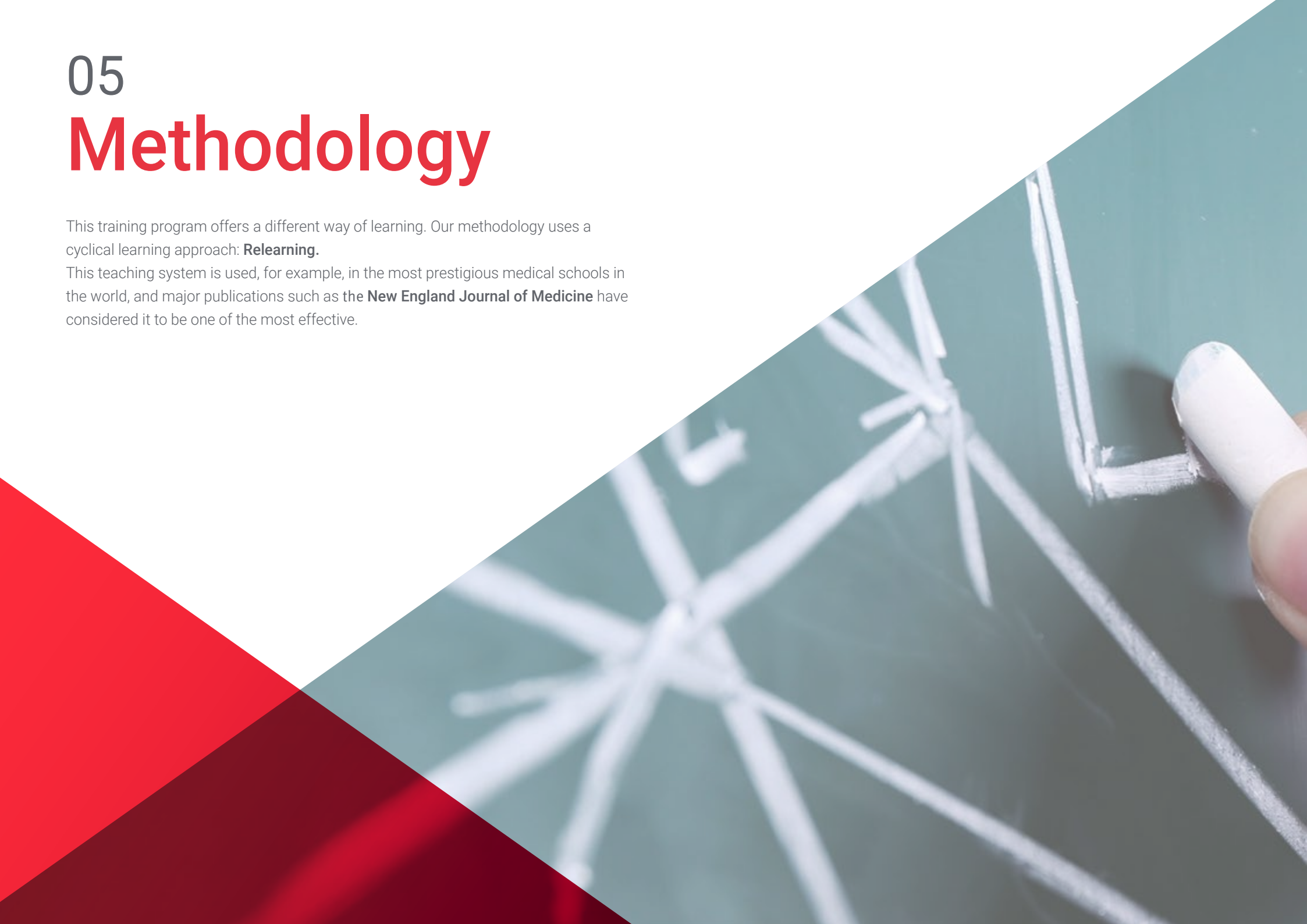
- 3.1. Working with TinkerCad in the Classroom
  - 3.1.1. About Tinkercad
  - 3.1.2. 3D Perception
  - 3.1.3. Cube, Hello World!
- 3.2. First Steps with TinkerCad
  - 3.2.1. Using "Hole" Command
  - 3.2.2. Grouping and Ungrouping
- 3.3. Clone Creation
  - 3.3.1. Copy, Paste, Duplicate
  - 3.3.2. Design Scaling; Modifying Clones
- 3.4. Fine-Tuning Our Creations
  - 3.4.1. Align
  - 3.4.2. "Mirror" (Mirror effect)
- 3.5. Printing First Designs
  - 3.5.1. Import and Export Designs
  - 3.5.2. Which Software Can We Use for Our Printing?
  - 3.5.3. From TinkerCad to CURA. Making Our Designs Come True!
- 3.6. Guidance for Design and 3D Printing in the Classroom.
  - 3.6.1. How to Work with Design in the Classroom?
  - 3.6.2. Linking Design and Contents
  - 3.6.3. Thingiverse as a Teacher Support Tool

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.*

“

*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

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.



*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.

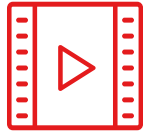
*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

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 adapted in 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, students can watch them as many times as they want.



### Interactive Summaries

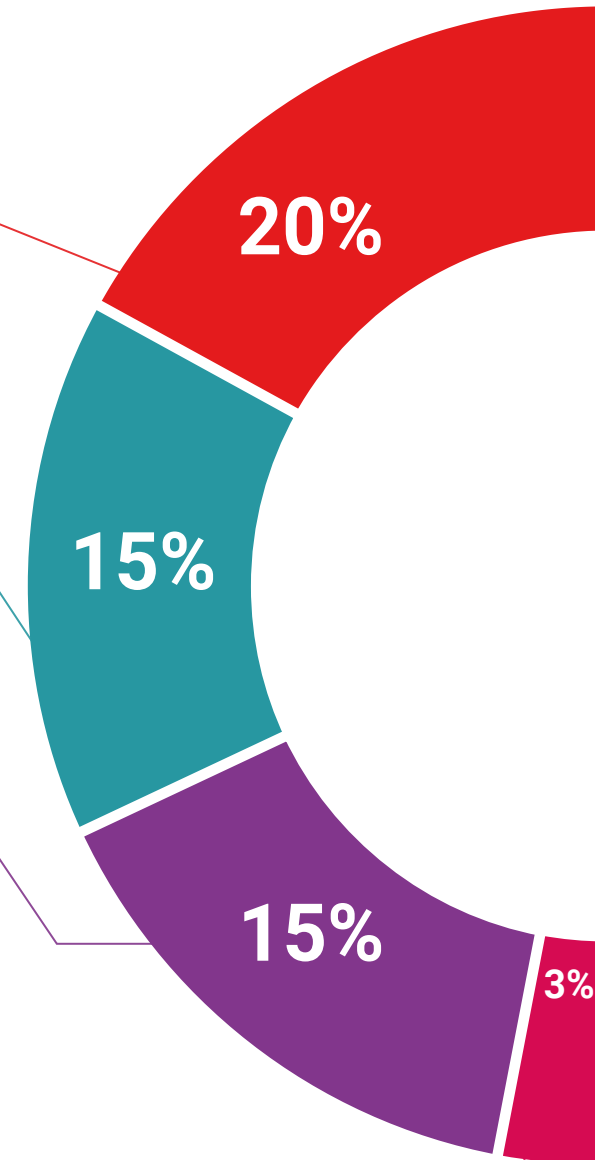
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

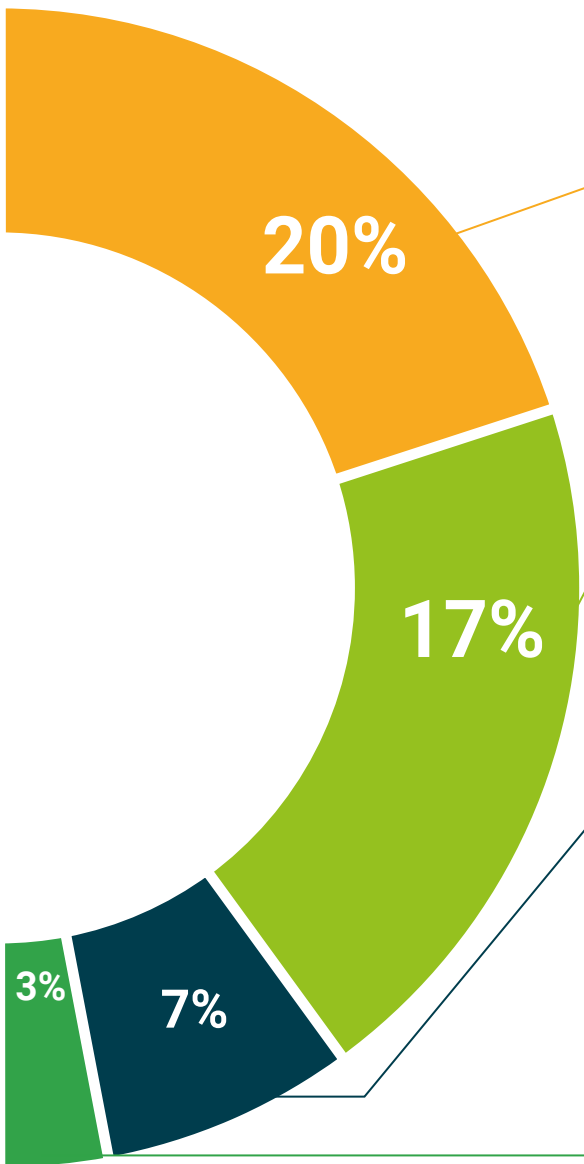
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



### 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 their 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 Diploma in 3D Design and Printing in Education guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.





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

This **Postgraduate Diploma in 3D Design and Printing in Education** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Diploma, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Diploma in 3D Design and Printing in Education**

Official N° of Hours: **400 h.**



\*Apostille Convention. In the event that the student wishes to have their paper certificate issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present quality  
development language  
virtual classroom



Postgraduate Diploma  
3D Design and  
Printing in Education

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma

## 3D Design and Printing in Education

