

# **Innovative Universities Global Webinar Series: Welcome to Season 2!**

# Construction of the webinar



**60 min:** 15-min presentation + discussion



**Live:** every second Thu @5PM CET



**Recordings:** available on YouTube + impressions sharing via [#InnovativeUniversities](#)



## Moderators

for the 2023-2024 season:  
Isak Frumin and Dara Melnyk



## The Steering Committee:

Phil Altbach, Jules Coleman,  
Daniel Kontowski, Attila Paustis,  
Jamil Salmi, Po Yang, Maria Yudkevich

# The Steering Committee



**Jamil Salmi**

Global Tertiary Education Expert, emeritus professor of higher education policy at Diego Portales University, Chile.



**Maria Yudkevich**

Research Fellow, Center for International Higher Education, Boston College.



**Philip Altbach**

Professor Emeritus and Distinguished Fellow, Center for International Higher Education, Boston College, US.



**Atila Paustis**

Well-known as a head of the Department for Higher Education Research & Development bei Donau-Universität Krems, Austria and academic director of the Erasmus Mundus Master Programme “Research and Innovation in Higher Education MSc”.



**Daniel Kontowski**

Head of Studies Social Sciences at Amsterdam University College.



**Jules Coleman**

Member, Constructor Group Strategic Advisory Board; Professor Emeritus and Provost Emeritus, New York University.



**Po Yang**

Dr. Po YANG, Chair of Department of Economics of Education and Administration, Graduate School of Education, Peking University.



# Past Season of the Webinar



**The Story of JGU: India's Aspirations to Build World Class Universities**



**Anadolu as a Giga Open University: Higher Education at a Large Scale**



**CODE University of Applied Sciences**



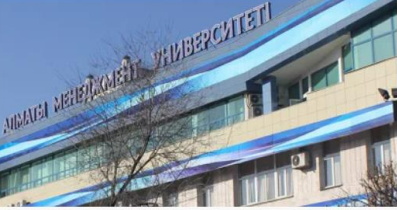
**University of the People: Making Higher Education Accessible to All**



**African Leadership University: an institution shaping the future of the continent**



**The University of Campinas: social inclusion at a research-intensive Brazilian university**



**Almaty Management University**



**University College Freiburg - A Learning Community**



**From the Ground Up: Remaking Engineering Education for the 21st Century**



**Woolf University: how does an international collegiate institution operate?**



**Asian University for Women**



**Arizona State University: Continuous innovations in higher education**



**Minerva University: How to build an effective university when the system trains people to do things wrong**



**Navigating the Challenges of University Technology Transfer in China: Experiences and Solutions from Shenzhen**



**Yale-NUS College: Intercultural Education and the Liberal Arts**



**In Pursuit of Excellence with focus on Okinawa Institute of Science and Technology**



**The development of Liberal Arts and Sciences in the Netherlands: The case of University College Maastricht**



**Higher Education for Mountain Communities: Regionalism and Development. Experience of the University of Central Asia**



**Innovative Universities Global Webinar**

**Tecnológico de Monterrey:  
A history of constant innovation  
in education**

September 12, 2024

# Invited expert



**Dr. David Garza**

President,  
Tecnológico de Monterrey



# Tecnológico de Monterrey

*A history of constant innovation in education*

**David Garza**  
President



 david\_garza    david-garza-salazar  
 david.garzasalazar    DavidGarzaS



# 1943



# 350 students

Undergraduate  
programs only in:  
**Engineering & Business**  
and Sr. High School





# Presence in



~90,000 students

54,762 undergraduate

6,992 graduate

27,832 Sr. High School

2023

+25,000 new alumni

(Includes 8,000 Sr. High School)



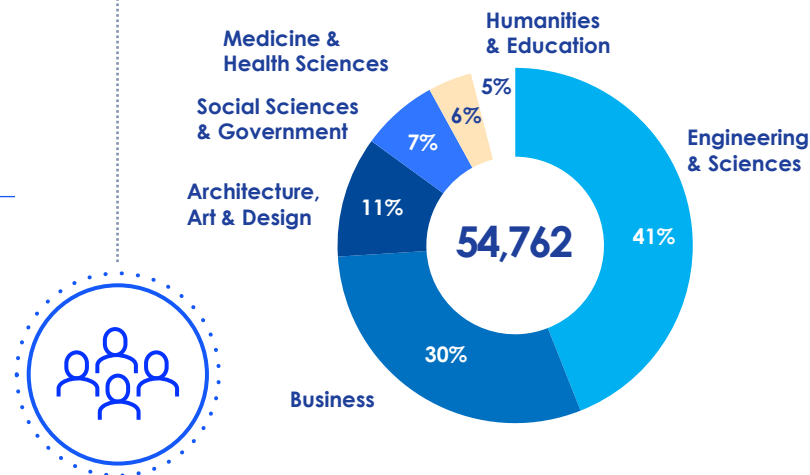
## Undergraduate students

48%

With financial aid

~40%

Graduates with international experience



+460,000 alumni

(360,000 graduate & undergraduate)



+8,000 university level faculty

721 researchers<sup>1</sup>



+158,000

people in continuing education

<sup>1</sup> Members of SNI: National Research System

# Tecmilenio



**+62,536**

Graduate, undergraduate & Sr. High School **students**



**85%**  
With financial aid



**+167,000**  
Alumni

**13,203**  
2023



**12**  
Connect spaces



**89%**  
Employability upon graduation



**29**  
Campuses



**+52,229**  
Learners

**América**  
economía

The best private hospitals in Latin America

**Mexico**

**#2** Zambrano Hellion

**#3** San José

**+20**  
medical specialties in

Top **3**  
Mexico

(6 specialties #1)



**+14,000**  
Hospitalized patients



**+103,000**  
Patient encounters



**14**  
Clinical research protocols

**TecSalud**  
Foundation

**27,245**  
Benefited patients per year

# TecSalud







Tecnológico  
de Monterrey



TECMILENIO



TecSalud  
Sistema de Salud del  
Tecnológico de Monterrey

# Economic and Global Social Impact of Graduates in 80 years



**3.2 million**  
jobs worldwide  
created



**220,000**  
businesses  
started



**\$260  
billion USD**  
annual revenue  
generated



**1.3 millions**  
hours of  
volunteering  
per month



**460,000**  
jobs created  
in NGOs



**32,000**  
non-profit  
organizations  
generated



# Research

## Research projects

with **+10 Top200** universities



## Research areas

- Advanced materials for sustainable manufacturing
- Data science
- Future of cities
- Obesity
- Genomics
- Future of education
- ...

# Entrepreneurship

**40%** Undergraduate students in entrepreneurship courses every year



Undergraduate entrepreneurship programs



## International networks



# Internationalization

Undergraduate Student Mobility

**6,459**

+4,558 Sr. High School

Outbound

**+3,700**

Inbound

1 Includes degree seeking students

**~40%**

of our students graduates with international experience

MEMBERS OF THE BOARD OF TRUSTEES AND STEERING COMMITTEES







**#185** | **#30** among private



Global University  
Employability R  
ankings

**#81** world | **#1** LATAM



Latin America  
University  
Rankings 2023

**#4** LATAM | **#1** Mexico



**#6** entrepreneurship



3 subjects **Top 50**  
6 Top 100



Times Higher Education  
**Impact Rankings 2023**

**#67** world



Global MBA &  
Business Master's  
Rankings **2024**

**#1** LATAM  
7 consecutive years

**América**  
economía

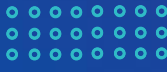
Los mejores hospitales  
privados de América Latina

**#2** Hospital  
Zambrano Hellion  
**#3** Hospital San José



Constantly  
**innovating**  
in education...

# Evolution of Distance Learning



**1965**  
University of Houston  
First college course on TV



**60s**  
Tecnológico de Monterrey  
First course on TV



# A History of Constant **Innovation in Education**

**1943**

- Foundation

**1947**

- First university campus in Mexico

**1950**

- 1<sup>st</sup> university outside the US accredited by a regional US accreditation body (SACSCOC)

**1964**

- First course on TV

- Majors that combine engineering with business

**1969**

- First major in computer science in LATAM

**1980-1989**

- Use of personal computers for academic purposes (1980)

- First Internet connection in Mexico and Latin America (1988)

- Distance learning (1989)





1980

Computer Room  
Monterrey

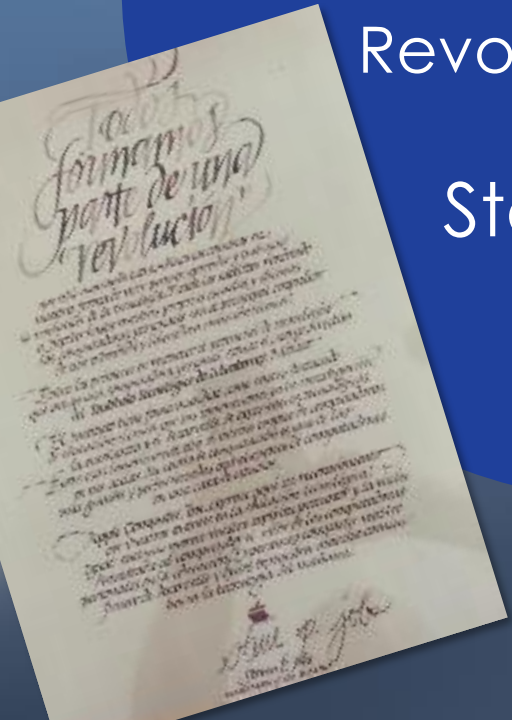




# Steve Jobs recognizes us

“...Tecnológico de Monterrey stands out for being part of the ‘Technological Revolution’...”

Steve Jobs,  
1983



## Apples “Revolutionize” Education in Monterrey



Executives from Apple and the Monterrey Institute of Technology discuss Apple's role in the development of the institution. Shown are Steve Jobs of Apple Computer, and Dr. Ramon de la Peña, Dr. Fernando Garcia Roel, Dr. Jose Trevino, and Dr. Fernando Jaimes, all of MIT.



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**1990-2000**

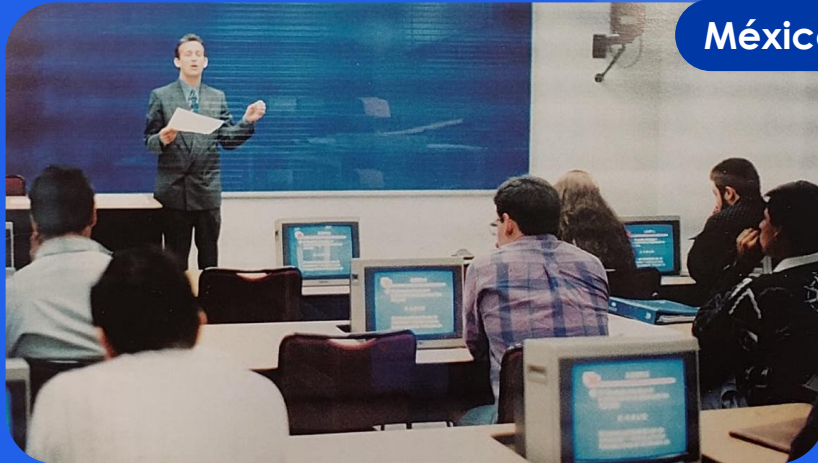
- Virtual University (1996)
- Laptop as a requirement for every student (1997)
- Use of LMS Learning Space

# Distance Learning

## 1989 - 1999



Via  
satellite



## Since 2000

~2,000

**graduate** fully  
on-line students  
(5,000 face to face)

Via Internet

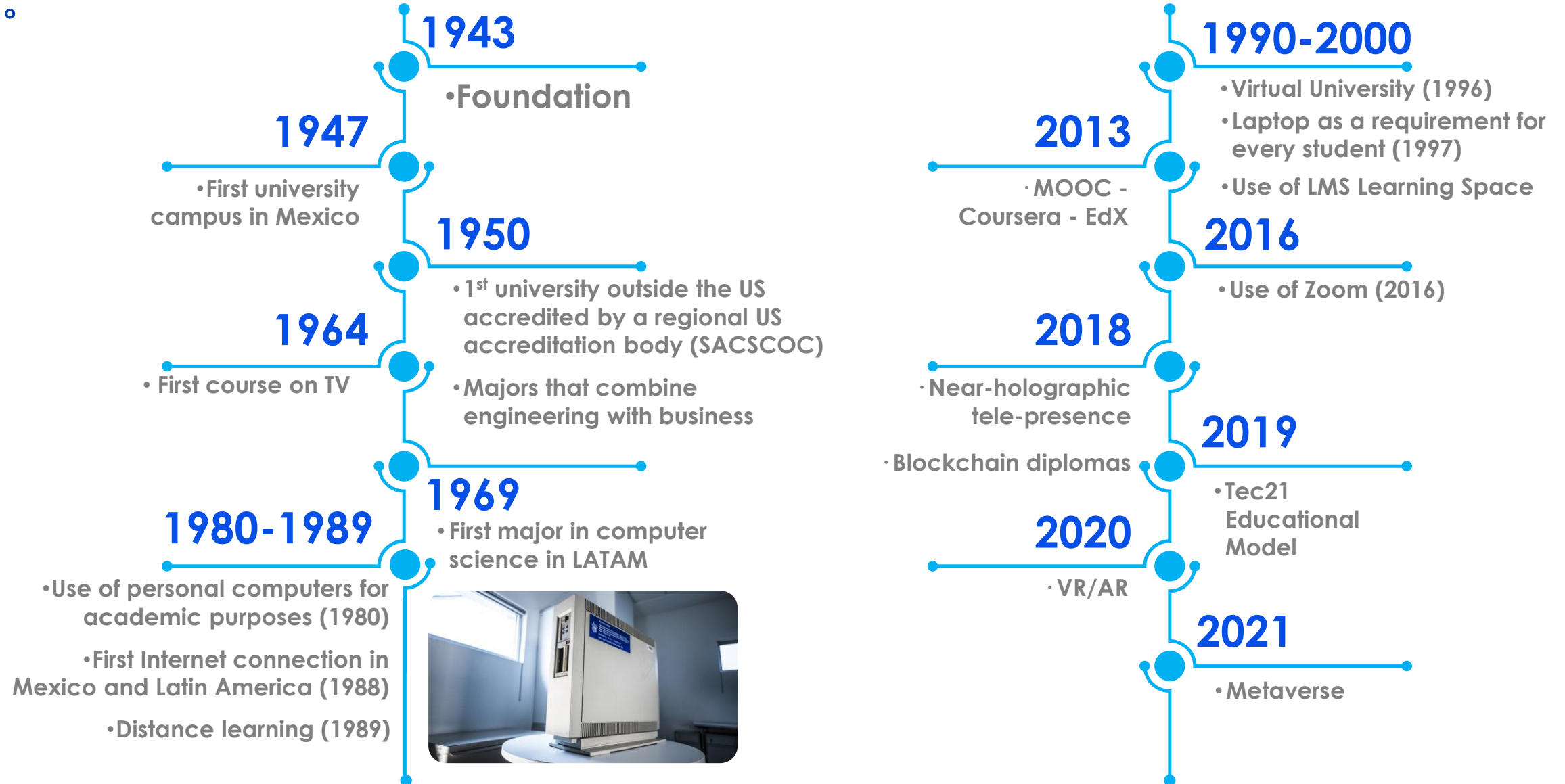


+150,000 people  
**continuing education**

30,000 people  
**Social Programs &  
Community Learning Centers**

**43%** undergraduate students  
took **at least 1 on-line course**

# A History of Constant **Innovation in Education**





A futuristic landscape with a glowing blue road and wireframe mountains. The road is a bright blue line with a dashed center, receding into the distance. The mountains are rendered as blue wireframe structures. The sky is dark with small white stars. The entire scene is framed within a circular shape.

“We are currently preparing students for **jobs that don't exist**,  
using **technologies that haven't been invented**,  
in order to **solve problems we don't even know** exist yet.”

Karl Fisch

# Tec21

## Educational Model

## Challenges

“ Tell me and I forget.  
Show me and I remember.  
Involve me and I learn. ”

Chinese proverb

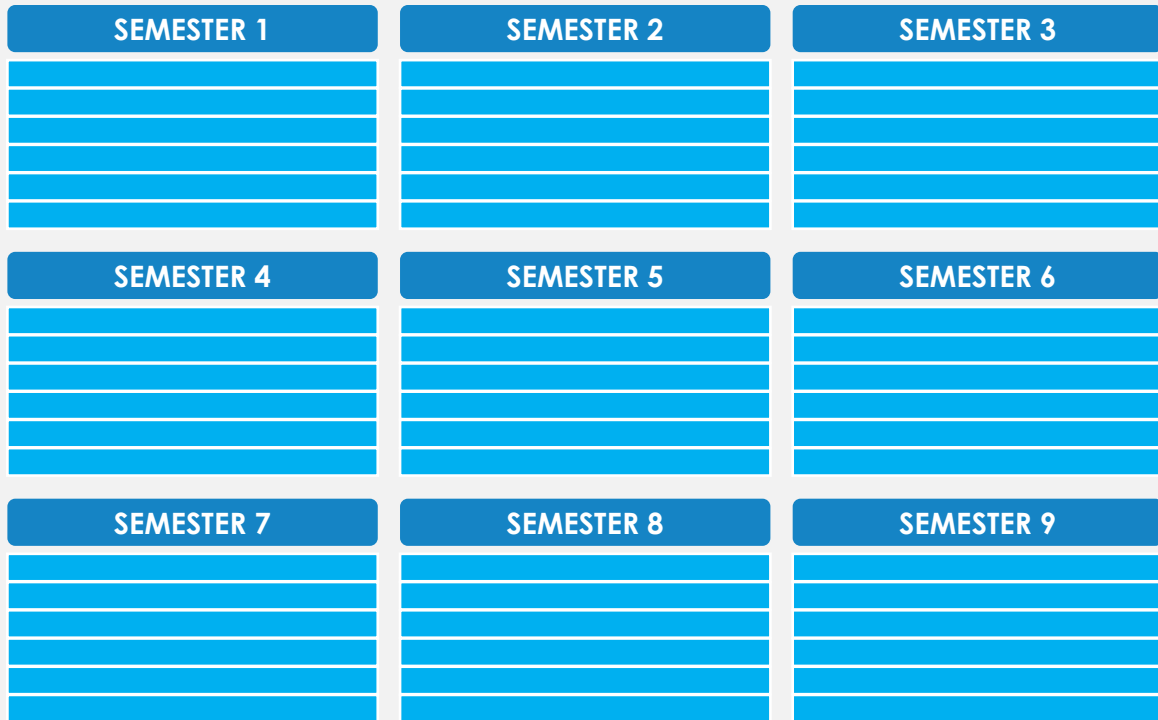




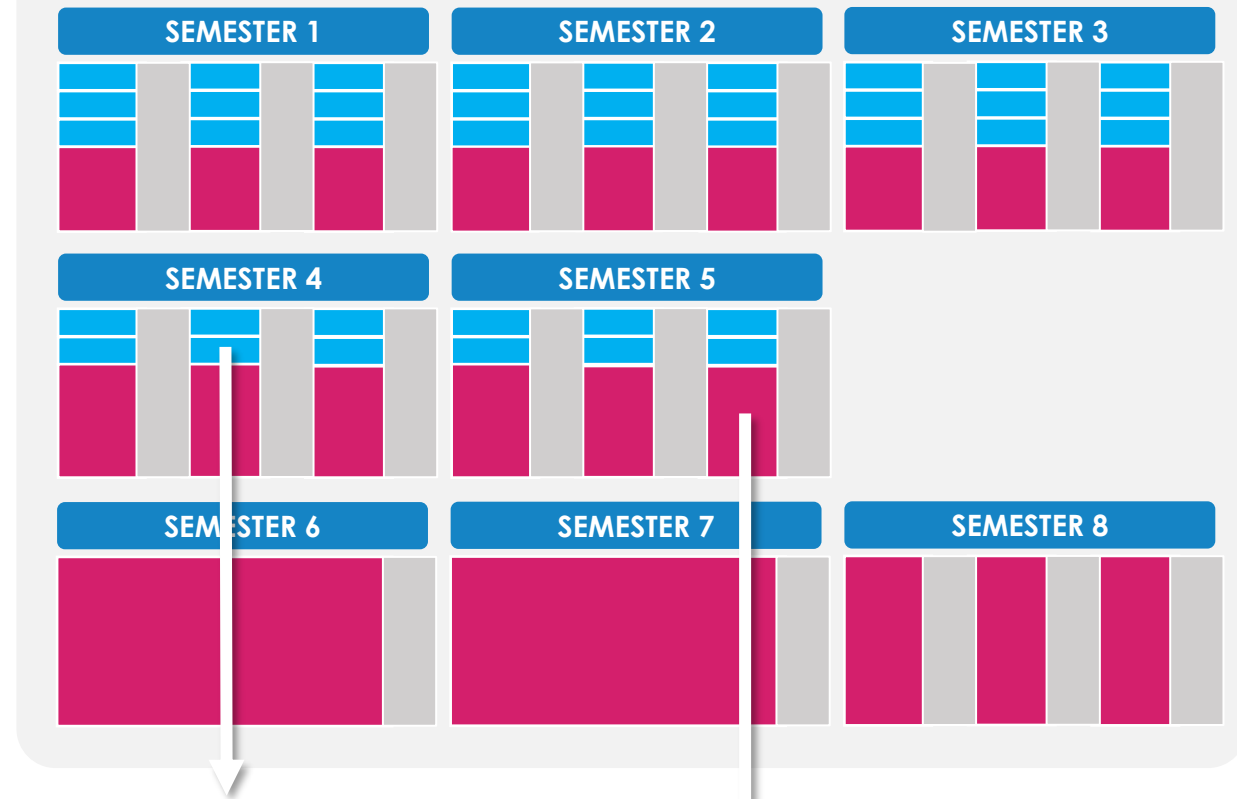
# Educational Model Curriculum



## Before



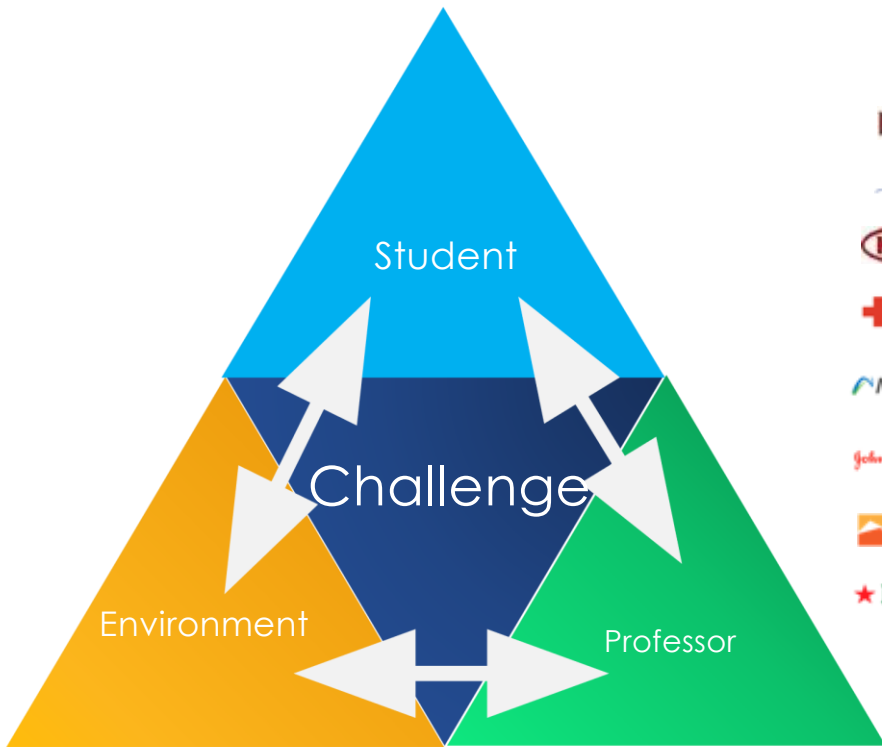
## Tec21



Traditional  
course

Challenge

# Challenge-based Learning



**+2,200** learning partners  
(external)



# Educational Model

international interest

University World News   
THE GLOBAL WINDOW ON HIGHER EDUCATION

Monterrey Tec's radical revamp  
to teach competencies



CASE STUDY  
Breaking Paradigms to  
Develop Leaders for the 21st Century  
Tec de Monterrey: How a Top University in Mexico  
Radically Overhauled its Educational Model

 Medium

The challenger university  
landscape

Mario Barosevic  
Emerge Education



Established institutions that have  
managed to innovate with existing  
structures and create unique student  
experiences and outcomes propositions.

Tec de Monterrey: How a Top University in Mexico  
Radically Overhauled its  
Educational Model

 IFC International  
Finance Corporation  
Creating Markets, Creating Opportunities



**BBC**

Emiliano Iturriga  
Tec de Monterrey Alumnus  
Rutopia Co-Founder

so they can run tours themselves.

Tec21 at BBC in London



Challenged to rise

Active learning based on tasks set in the real world builds skilled graduates and gives citizens ready to face a world of change. David Garza-Salazar says

Higher Education  
Higher Education in Mexico  
LABOUR MARKET RELEVANCE AND OUTCOMES



Book: Universities as  
Engines of Economic  
Development



Case 3.3 Tecnológico de Monterrey-  
Tec21 Educational Model.  
Integrating the development of  
knowledge and intellectual,  
technical, and social skills with  
attitudes and values, through  
challenge-base and flexible learning  
experiences.



Tec de Monterrey, as part of  
emerging leaders in engineering  
education

....has recently developed the Tec21  
curriculum that is structured around a series of  
design-based challenges. Each challenge is  
associated with a set of 'prior competencies'.

# Innovative Use of Technology in Education



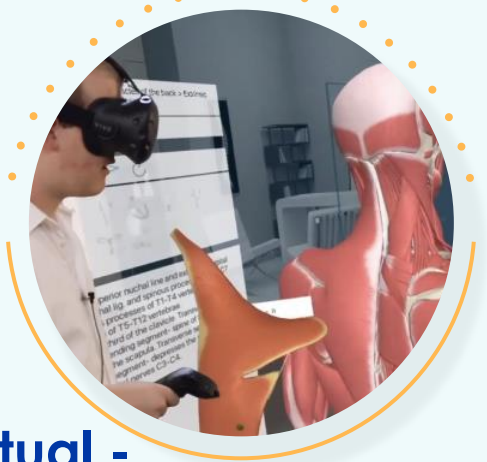
Hologram Professor



Blockchain



Metaverse



Virtual -  
Augmented Reality



TECgpt



Adaptative learning







# Facing the Pandemic...

## TEC21

**+55,000** Remote class sessions and other activities (per week)

 **GLOBAL CLASSROOM**  
by Tec de Monterrey

Innovative international experiences

**+100** Global Visiting Faculty from **+26** countries

**257** courses **80** universities

Continuing education **100% digital**

Commencement ceremony

**TEC**  
*Forever*



Fireside chat with **Bill Gates**

# Micro-credentials

## Tec21

digital **credentials** that  
**endorse competencies**



- **University degrees** will remain **relevant**
- **Alternative credentials** emerge





Institute  
for the Future  
of Education



OUR ASPIRATION

To improve lives  
by transforming  
higher education  
and lifelong  
learning.



OUR PURPOSE

To create and apply  
research-based innovation  
in education.

54

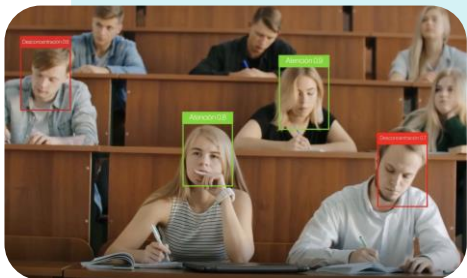
Researchers



**Michael Fung**  
Executive Director

### iClassroom project

Evaluates the engagement, attention and interaction  
of students through AI and video analysis.



- Chief Data Officer for SkillsFuture, Ministry of Education Singapore
- Former member of the Directive Team of The Hong Kong University of Science and Technology
- An expert in AI, data science and ICT systems.







## IFE Conference in 10 years (2014-2024)



Participants

+29K



Institutions

+3K

# 2024

**+4,500** participants  
**700** organizations  
**40** countries

## Rectors and Presidents of 40 institutions have participated since 2014

1. Arizona State University, USA
2. Northeastern University, USA
3. Babson College, USA
4. Harvey Mudd College, USA
5. University of Washington, USA
6. UT Austin, USA
7. San José State University, USA
8. Georgia Tech, USA
9. University of Technology and Design, Singapore
10. University of Auckland, New Zealand
11. The University of Edinburgh, Scotland
12. Maastricht University, Netherlands
13. University of Twente, Netherlands
14. University of Alberta, Canada
15. The University of British Columbia, Canada
16. Instituto de Empresa, Spain
17. Universidad de Mondragón, Spain
18. Universitat Jaume I, Spain
19. Universidad de Deusto, Spain
20. University of Cape Town, South Africa
21. Universidad del Desarrollo, Chile
22. Pontificia Universidad Católica de Chile
23. Universidade Estadual de Campinas, Brazil
24. Universidad de los Andes, Colombia
25. ESPOL, Ecuador
26. Universidad del Valle, Guatemala
27. UNAM, México
28. El Colegio de Mexico
29. Universidad de Guadalajara, Mexico
30. UANL, Mexico
31. Universidad Tecmilenio, Mexico
32. Universidad Veracruzana, Mexico
33. ...



**Thomas Frey**  
Futurist, author of  
"Communicating  
with the future"



**John Couch**  
Apple Vice President  
of Education



**Marina Gorbis**  
Director of the  
Institute of The Future



**Carl Wieman**  
Nobel Prize in  
Physics



**Dean Keamen**  
Founder of FIRST  
Challenge



**Leonardo Garnier**  
Former Minister of  
Education of Costa Rica

# The most important newspapers in Spain say...



## EL MUNDO

PRIMER PLANO  
LAS UNIVERSIDADES. ANTE EL CHATGPT

El 75% de los alumnos y el 36% de los docentes usan la inteligencia artificial. Las universidades aprueban códigos éticos y los profesores cambian a métodos de evaluación analógicos como el examen oral, para evitar fraudes

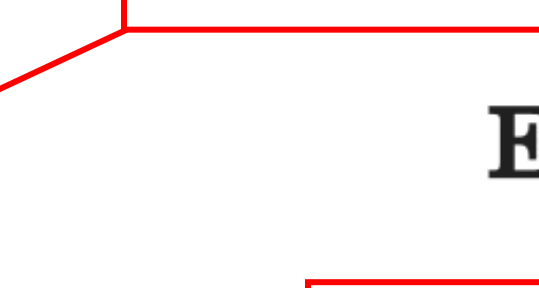
### LA IA LLEGA A LOS CAMPUS: DEL 'TROFEBOT' A LA PREDICCIÓN DEL FRACASO ACADÉMICO

**IGLES SANABRIA** / **Madrid**  
El uso de la inteligencia artificial en los campus universitarios ha pasado de ser un fenómeno de nicho a un fenómeno masivo. En España, el 75% de los alumnos y el 36% de los docentes ya utilizan herramientas como ChatGPT para tareas académicas. Este avance tecnológico ha generado tanto entusiasmo como preocupación, especialmente en lo que respecta a la integridad académica y la privacidad de los datos.

En un momento en el que la tecnología avanza a pasos agigantados, las universidades españolas se enfrentan a un desafío sin precedentes: cómo integrar la inteligencia artificial en su enseñanza y gestión, sin perder de vista los valores académicos y éticos que han sustentado su prestigio durante siglos.

**LA CONFERENCIA DE REYES ESTÁ HACIENDO POSICIONAMIENTO CONJUNTO**  
**«NO SE TRATA DE PROHIBIR SINO DE EDUCAR EN EL USO RESPONSABLE»**

### PRIMER PLANO LAS UNIVERSIDADES. ANTE EL CHATGPT



### JORNADAS

Las universidades españolas se enfrentan a un desafío sin precedentes: cómo integrar la inteligencia artificial en su enseñanza y gestión, sin perder de vista los valores académicos y éticos que han sustentado su prestigio durante siglos.

## Tecnológico de Monterrey (Mexico) has developed a tool...

## EL PAÍS

EL PERIÓDICO GLOBAL



Un alumno se hace un selfie durante su graduación en la Universidad de Miami, en una imagen de la institución.

### Inteligencia artificial para seleccionar a los futuros universitarios

Los campus comienzan a emplear la tecnología a la hora de descartar candidatos, orientar las entrevistas de admisión y asesorar al alumno antes de escoger carrera

El uso de la inteligencia artificial en la selección de futuros universitarios está ganando terreno. En España, el 75% de los alumnos y el 36% de los docentes ya utilizan herramientas como ChatGPT para tareas académicas. Este avance tecnológico ha generado tanto entusiasmo como preocupación, especialmente en lo que respecta a la integridad académica y la privacidad de los datos.

## Tec uses its own bot to solve practical questions...

“Puede ayudar a sintetizar información. Pero la decisión final debe ser de los comités”  
**David Garza**  
Rector y presidente ejecutivo del Tecnológico de Monterrey

“Se va a utilizar en los centros educativos, donde se va a utilizar”  
**David Garza**  
Rector y presidente ejecutivo del Tecnológico de Monterrey

“El 75% de las empresas españolas ya han contratado en 2023”

# Lifelong Learning



158,000 people



200 projects with international organizations

Brazil, Chile, Costa Rica and Dominican Republic



- **Re-skilling / Upskilling**
- **60 year curriculum**

22-24 years



30 years

40 years

50 years

60 years





# Boosting AI

## TECgpt

1<sup>st</sup> university in LATAM to develop its own generative AI platform

+4,700 trained professors

TecGPT the generative AI chat of Tec de Monterrey

Tec prepares its own AI tool

**REFORMA**  
Tec alista su propia herramienta de inteligencia artificial

**EL UNIVERSAL**  
TECgpt, el chat de inteligencia artificial generativa del Tec de Monterrey

**LÓPEZ-DÓRIGA DIGITAL**  
Tec de Monterrey innovates with its own generative artificial intelligence model



Integration in curriculum



Reference to Tec de Monterrey guidelines



How will **research** be **enhanced**?

• What will **education** and **majors** be like in the **age of AI**?

• How will **engineers, lawyers or doctors** in the **future** be like?

• What **new professions** will emerge?

How can we **prepare**

ourselves for a **world** in which **AI and humans**

**coexist**?

• What will be the **impact of the normalization of human-algorithm interactions** on human, political and social relations?

• How will **higher education institutions** evolve in a world where **AI is normalized**?







# From University to **Multi-versity**



## Multi-disciplinary

Not only specialization,  
but **diversity of skills**



## Multi-cultural

Interaction with  
**different cultures**



## Multi-modal

The experience can be  
**face-to-face, hybrid, remote  
synchronous or  
asynchronous**



## Multi-dimensional

“T” shape and **intellectual,  
emotional, occupational,  
physical and social  
dimensions**



## Multi-institutional

From 1-student at 1-  
institution to **1-student  
associated with multiple  
institutions**



## Multi-experiential

Learning in **real world  
environment** and not only in  
the classroom



## Multi-stages

Continuous learning in  
**different life stages**



## Multi-organization

Activities in **collaboration  
with other organizations**

# Keep in mind...

- **Avoid complacency.** Never settle; always seek a better way
- **Don't wait to have all the answers** nor to achieve perfection
- Start small, but **maintain the vision to scale quickly**
- Find **champions** who support your cause, and **always have a plan to persuade others**
- Build a **diverse team** with members who complement each other's strengths
- **Communicate clear and visible messages** that demonstrate the direction you want to go
- Achieve **quick wins**
- **Iterate**, and implement innovation **incrementally**
- **Be patient** and prepare to encounter failures and criticism
- Celebrate and **make known small achievements**; recognize **early adopters**
- **Secure the support of key stakeholders** and ensure the **finance**
- Remember: A **vision** without an **action** is just a dream, and **action** without **vision**, is a nightmare.



**The best way to  
predict the future is  
to invent it.**

Alan Kay





Tecnológico  
de Monterrey



Tecnológico  
de Monterrey

# Panel Discussion

Save the date:

**Thursday,  
September 26, 5PM CEST**  
**University of Austin (UATX)**

**Stay tuned for the upcoming  
webinar!**



**Dr. Pano Kanelos**

Founding president of the  
University of Austin



**Have a great evening and  
follow us with  
[#InnovativeUniversities](#)**