



# CERTIFICATE OF PARTICIPATION

The President of the Organising Committee of the  
**XXXIX REUNIÓN BIENAL DE LA SOCIEDAD ESPAÑOLA DE  
QUÍMICA**

**CERTIFIES THAT:**

**J. Bernal Del Nozal, A. De La Fuente Ballesteros, S.  
Valverde Bastardo, A.M. Ares Sacristán**

contributed with the Oral Flash Presentation + Poster entitled

**THE PODCAST AS AN EDUCATIONAL TOOL APPLIED  
TO EDUCATION IN A THEORETICAL SUBJECT OF  
DEGREE IN CHEMISTRY**

in the **XXXIX Reunión Bienal de la Sociedad Española de  
Química**, held in **Zaragoza** from 25<sup>th</sup> to 29<sup>th</sup> June, 2023.

And as evidence thereof, we hereby issue this certificate.

Prof. Fernando J. Lahoz  
President of the Organizing Committee

# THE PODCAST AS AN EDUCATIONAL TOOL APPLIED TO EDUCATION IN A THEORETICAL SUBJECT OF DEGREE IN CHEMISTRY

XXXIX Reunión Bienal de Química - Didáctica, Historia y Divulgación de la Química

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ABOUT US



XXXIX REUNIÓN  
BIENAL DE QUÍMICA

RSEQ



Zaragoza 2023  
25 - 29 de junio

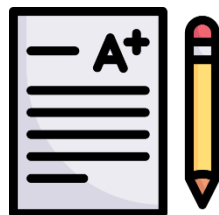
# INTRODUCTION

## WE DETECTED SOME PROBLEMS

- ✓ Students do not internalize basic concepts
- ✓ Difficult to assimilate, organize, and remember the syllabus
- ✓ Advanced terminology and abstract concepts

## WE PROVIDED WITH ANSWERS

- ✓ Podcast as an educational tool in teaching
- ✓ Provide resources that can be used 24 hours a day
- ✓ Complementing the curriculum with audio resources



Listen to the podcasts available online

Completion of the final exam of a theoretical subject

Evaluation of academic performance

Impact and positive feedback from the students

The grades obtained are lower than in previous years



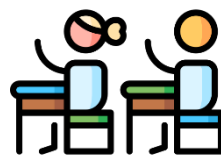
# OBJECTIVE

## Study of the effect of podcast use on the learning process of students in Chemistry

- 1 Facilitate students' learning by providing them with external support to help them remember key concepts
- 2 Contribute to meaningful learning so that the student is able to associate the information provided by the mini-podcast with that learned in the classroom
- 3 Experimenting a change of educational format, not considered so far in the innovation in the Degree in Chemistry at the University of Valladolid



Analytical Chemistry II  
(Theoretical subject)



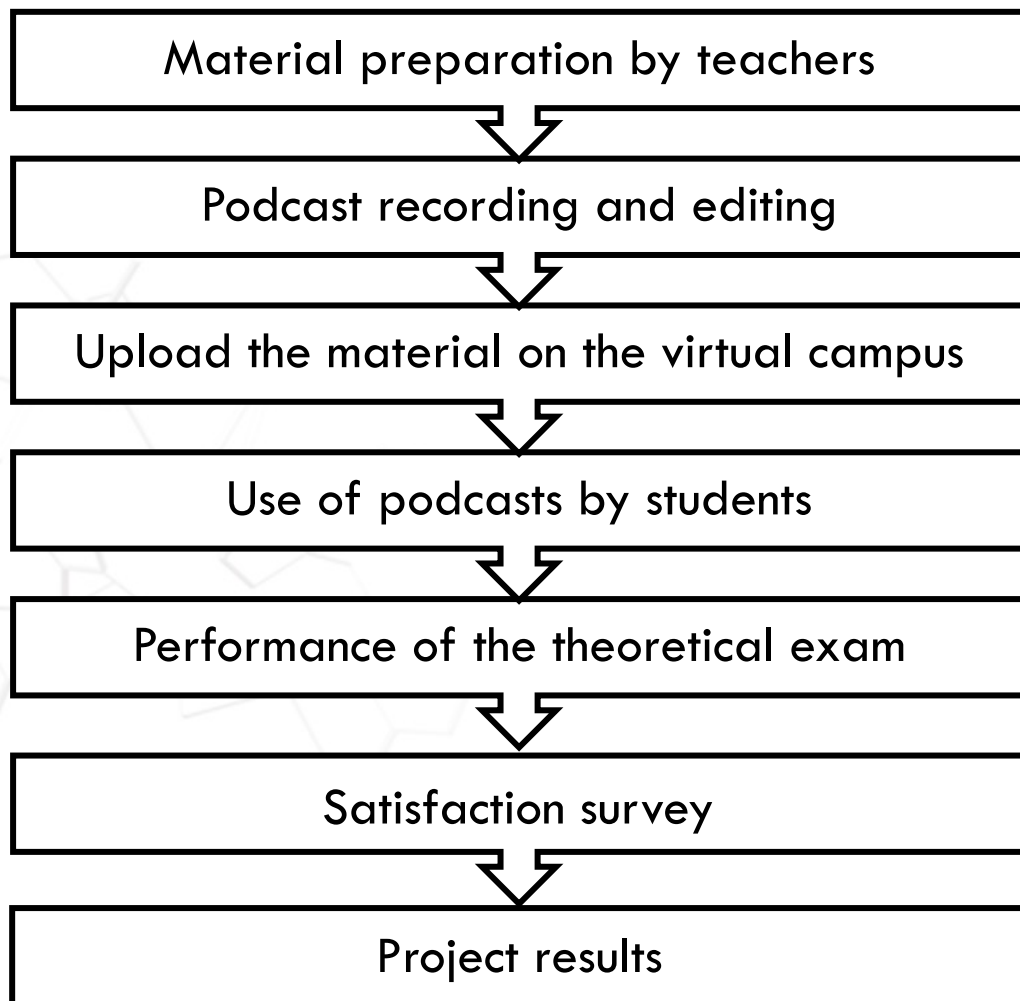
3rd year  
Chemistry Degree



2022-2023  
University of Valladolid



# METHODOLOGY



## PODCAST TOPICS

- General information on separation methods
- Ion exchange separation
- Separations by solvent extraction (I and II)
- General information on chromatographic separations
- Planar chromatography (I and II)
- Qualitative and quantitative analysis
- Gas Chromatography (I and II)
- High performance liquid chromatography (I and II)
- Capillary electrophoresis (I and II)



# RESULTS

Students' academic performance in the **regular** exam

Academic course	Group 1			Group 2		
	CM	%EA	%EP	CM	%EA	%EP
2021-2022	5,01	54,2	71,4	7,37	42,9	84,0
2022-2023	3,76	42,8	87,5	3,90	38,2	85,0

Students' academic performance in the **extraordinary** exam

Academic course	Group 1			Group 2		
	CM	%EA	%EP	CM	%EA	%EP
2021-2022	3,17	16,7	57,1	3,91	30,0	80,0
2022-2023	3,34	20,0	66,7	3,52	24,0	92,7

**CM:** average score; **%EA:** students who passed the exam; **%EP:** students who attended the exam



Decreased of Student academic performance in the 2022-2023 with the use of the podcast compared to the previous academic year.



Positive feedback in surveys: favorable opinion of the use of podcasts in this subject, and recommend it for other subjects



Increase of technological skills in teacher and student

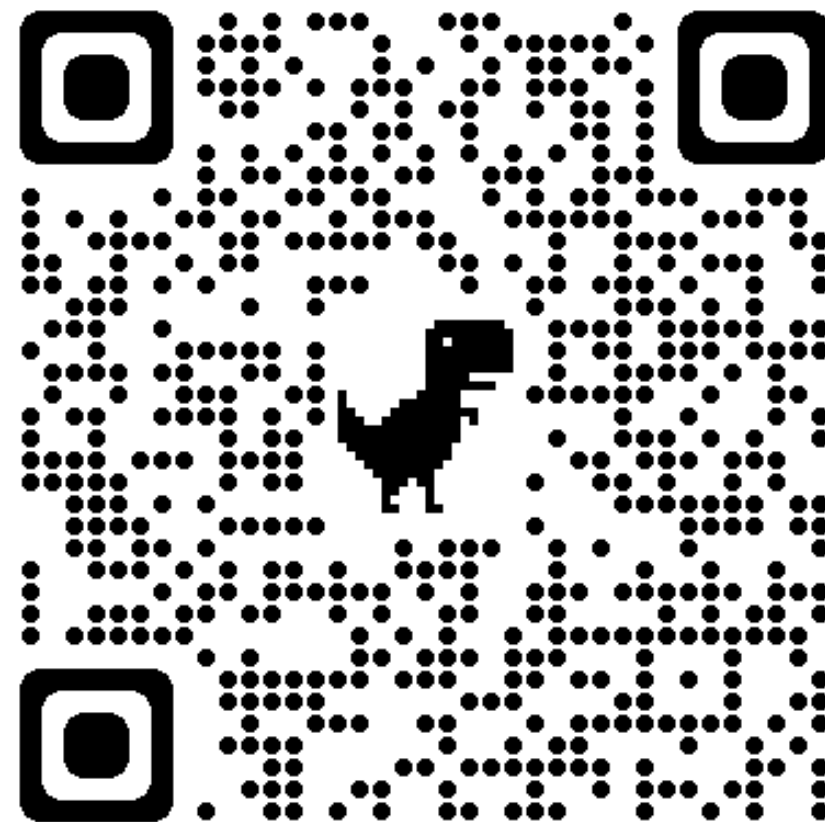


# CONCLUSIONS

- ⊗ The introduction of podcasts have **not increased** students' academic performance compared to previous years. The academic performance of students is influenced by many factors
- ⊗ The experience has only been tested for one academic course, and this is **not sufficient** to reach any representative conclusions
- ✓ Podcasts have great potential as an educational tool and students value the use of podcasts in a **useful** and **motivational** way
- ✓ The benefits are expected to be reflected in the **future** since this is the first time this resource is provided to the students



# LISTEN OUR PODCAST ABOUT ANALYTICAL CHEMISTRY TECHNIQUES





# THE PODCAST AS AN EDUCATIONAL TOOL APPLIED TO EDUCATION IN A THEORETICAL SUBJECT OF DEGREE IN CHEMISTRY

XXXIX Reunión Bienal de Química - Grupo Especializado en Didáctica e Historia de la Física y la Química

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