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REMOTE:
Assessing and evaluating remote learning practices in STEM. First lessons.

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REMOTE
Erasmus+

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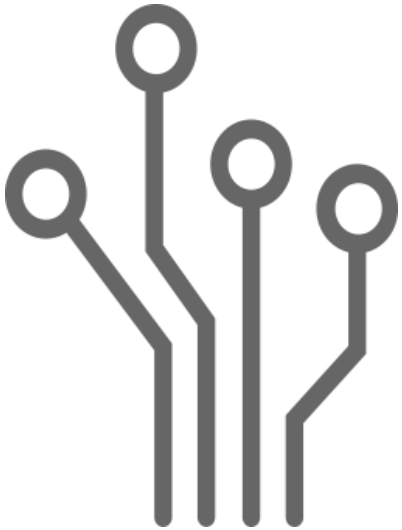
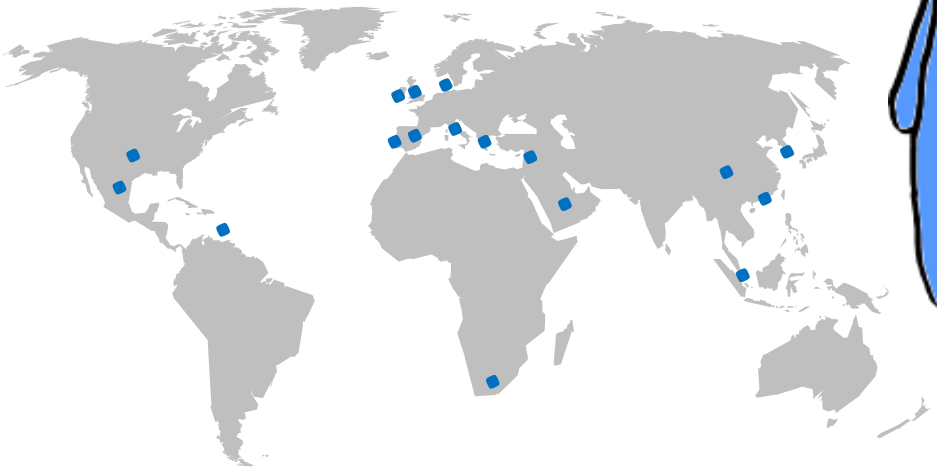
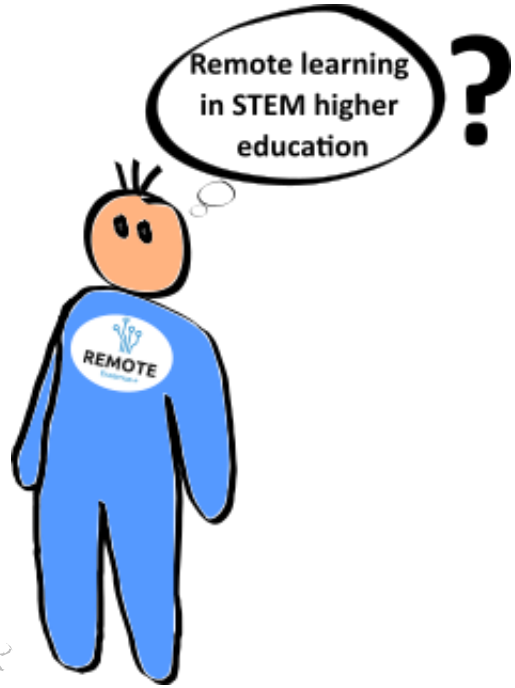
Table of Content







1. Introduction

COVID-19

Traditional classroom → Virtual platforms

Remote learning

- Flexibility
- Accessibility

- Reduced social interaction
- Technological barriers
- Need for self directed learning

(R. M. Bernard et Al., 2014)

QUESTIONS about **Eficacity** in:

- STEM knowledge acquisition
- Critical thinking
- Problem solving skills
- Collaborative learning

(W. Bao, 2020)

Is imperative to asses and evaluate the efectiveness and the impact of these practices.

2. REMOTE: "Assessing and evaluating remote learning in STEM"

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The aim of the REMOTE project:

- Explore various DIMENSIONS of remote learning of STEM education.
- Provide insights into CHALLENGES and OPPORTUNITIES.

Focussed on addressing the challenges posed by online learning and the use of disruptive technologies in STEM higher education.

Partners of REMOTE project:

The REMOTE team is composed by 4 higher education institutions (HEIs) and 3 external quality assurance agencies (EQAAs) from Catalonia, Italy and Portugal.

Universitat de Girona · UIC barcelona · Politecnico di Torino · Universidade do Minho · AQU CATALUNYA · anvur · A3ES Agência de Avaliação e Acreditação do Ensino Superior

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2. REMOTE: "Assessing and evaluating remote learning in STEM"

How?

- Empirical Research
- Surveys
- Case studies
- Expert opinions

1 Obtaining a comprehensive analysis of current state of remote learning practices in STEM

2 Investigating the impact of remote learning on:
- Student achievement
- Instructor-student interaction
- Development of essential STEM skills

3
- Identification of best practices
- Development of guidelines for educators

3. Methodology

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4 WORK PACKAGES:

- **WP1:** Project management.
- **WP2:** Desk research, crowdsourcing screening and webinar.
- **WP3:** Student and teachers questionary, in-depth interviews and creation o focus groups in partners' institutions.
- **WP4:** Elaboration of an integrated user-friendly report and guidelines. Creation of a benchmark.

3. Methodology

Crowd sourcing with more than 100 videos of 33 experts:

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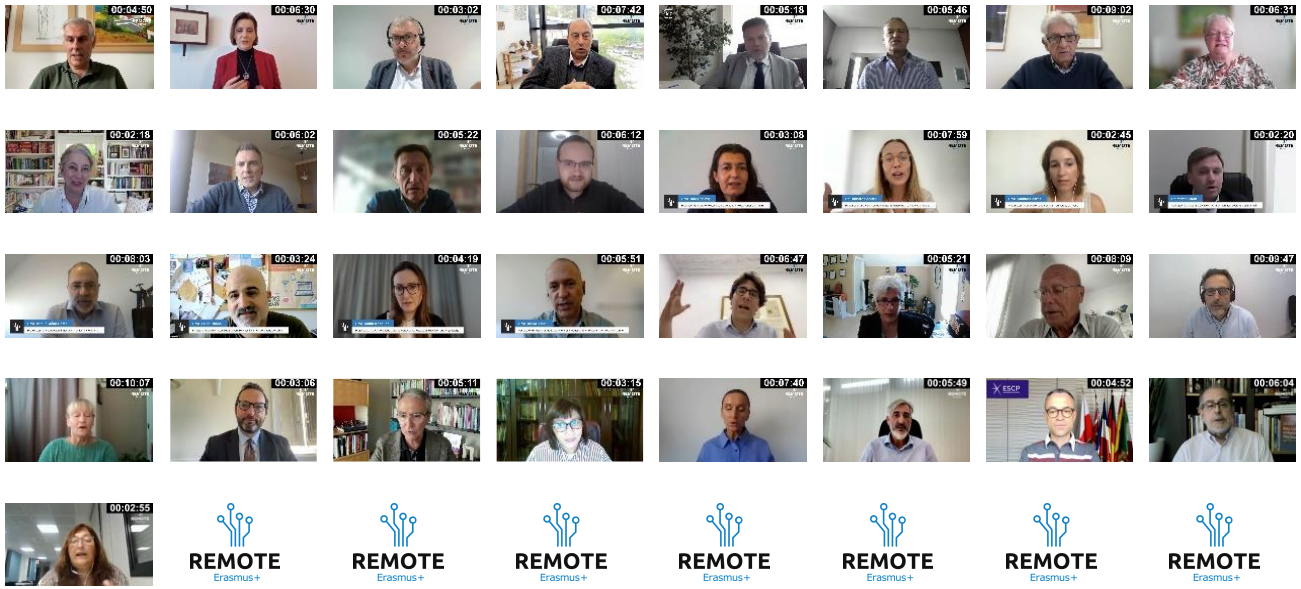

https://diobma.udg.edu/handle/10256.1/7109

3. Methodology

A Webinar in November 2023

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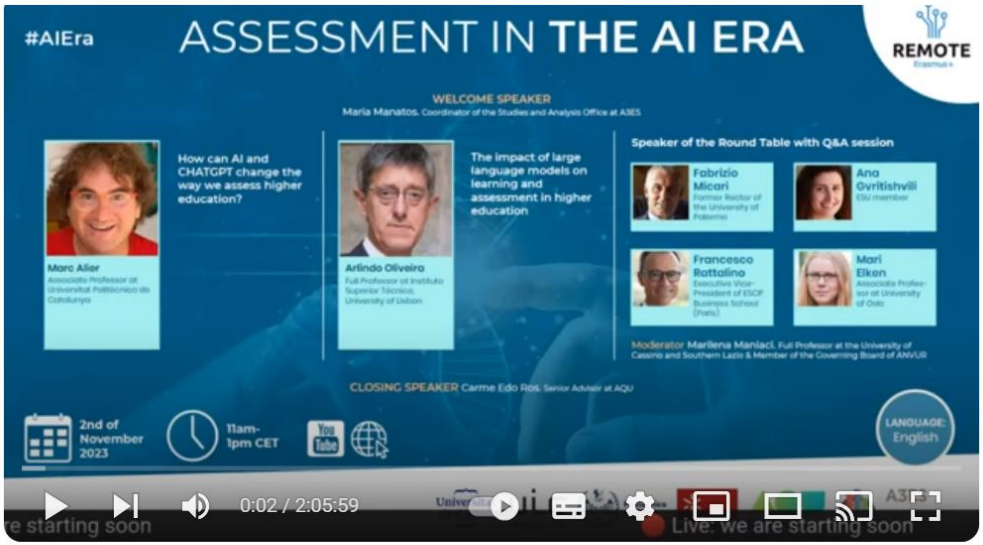
https://www.youtube.com/watch?v=9mI9m3yex_Q



LIVE - 2 November 2023 11 am - 1 pm CET - Assessment in the AI Era

A3ES
215 subscriptors
Subscrit
33
Comparteix

531 visualitzacions Emès fa 2 setmanes #AIEra
LIVE - 2 November 2023 11 am - 1 pm CET - Assessment in the AI Era

3. Methodology

Data Collection:

This study follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (**PRISMA**) guidelines. (D. Moher et al., 2009)

Descriptive analysis:

For conducting analysis of the state of art, the versatile R programming language for data analysis was performed. Specifically, Bibliometrix package of R was used. (M.Aria et al., 2017)

Classification in Typologies:

A classification into different typologies according to the area in which different academic contributions are focused were made. The main characteristics of these actors according with the literature has been presented.

4. Firsts Results

Data collection:

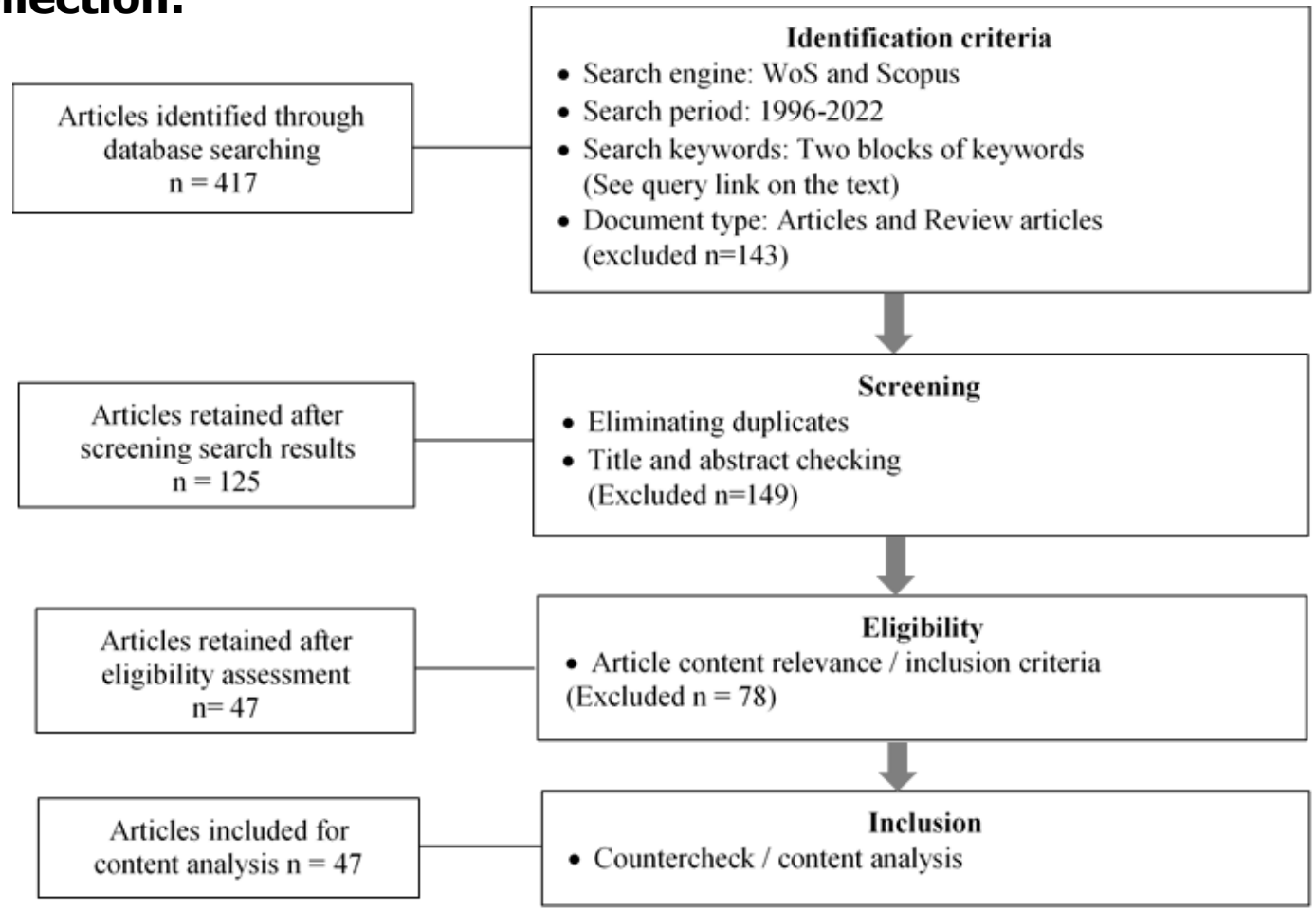


Fig. 1. PRISMA flowchart.

4. Firsts Results

Descriptive Analysis

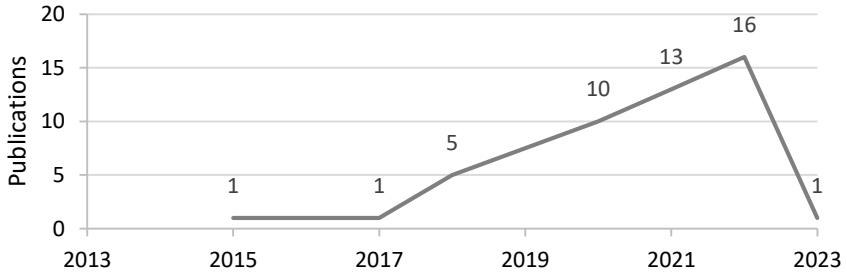


Fig. 2. Trend scinetific productiion. Articles included in the review (N=47)

Country	Publications	Country	Publications
USA	13	Ireland	1
Italy	3	Israel	1
Portugal	3	Korea	1
Saudi Arabia	3	Mexico	1
Spain	3	Poland	1
United Kingdom	3	Qatar	1
Australia	2	Singapore	1
China	1	South Africa	1
Denmark	1	Trinidad and Tobago	1
Greece	1	NA	4
Hong Kong	1	**Total**	**47**

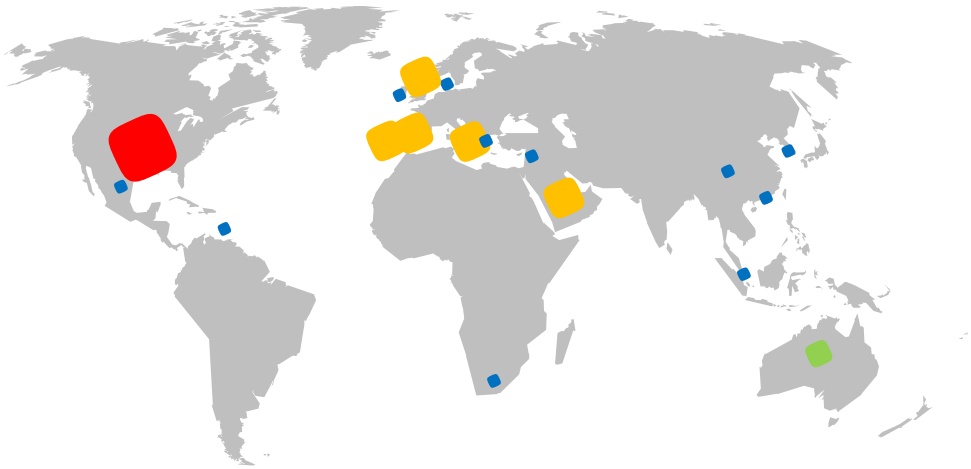


Table1. Scientific production by country

4. Firsts Results

Typologies:

The set of academic contributions detected can be classified in 4 major typologies according to the area which they are focused:

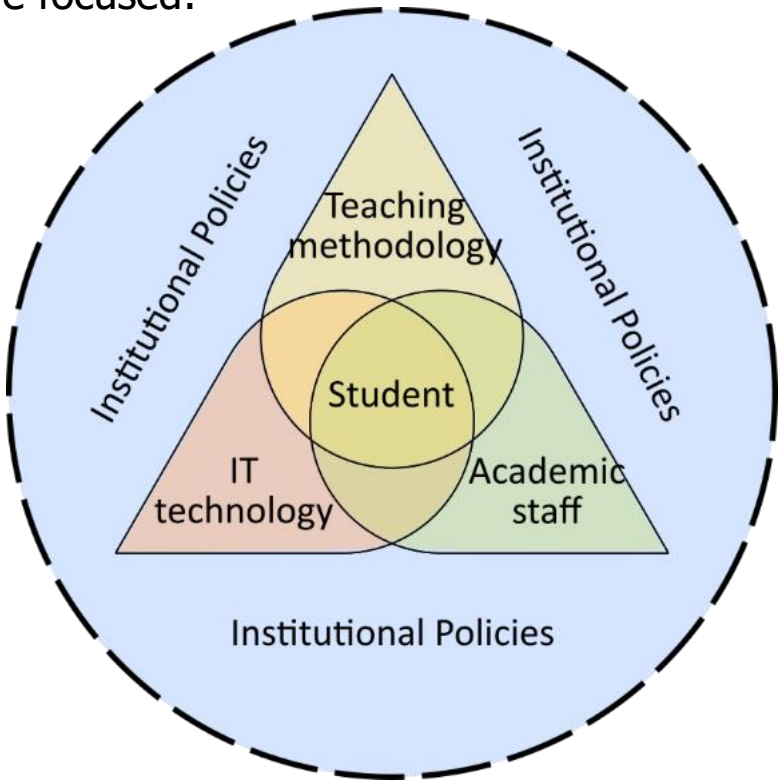


Fig. 5. Categorization of articles published in Assessing and evaluating remote learning practices. Source: own elaboration.

4. Firsts Results

Typologies:

Students:

- Active engagement in online learning.
- Focus on students shaping their experiences.
- Gap in research on online assessment.

Academic Staff:

- Instructors, facilitators, and mentors online.
- Comparative studies on online vs. face-to-face teaching.

Teaching Methodologies:

- Limited focus on the shift in teaching methods.
- Prioritizes engagement, flexibility, and personalization.
- Fosters inclusive learning environments.

Information Technologies:

- Crucial for effective online teaching.
- Learning Management Systems (LMS) as key platforms.
- Limited research on the link between technologies and teaching methodologies.

5. Conclusions

Overview of the Impact of COVID-19 on Distance Education in STEM Studies:

- The **COVID-19** pandemic marked a significant shift in education, **accelerating the adoption of distance education**.
- The focus of this presentation is to explore the analysis of the phenomenon in STEM studies, with an **emphasis on the literature's typologies**.
- In the last 8 years, 47 research papers have been published, indicating a **growing interest in the academic community**.
- Notably, **28%** of the world's publications on this topic come from the **United States**, with Spanish authors leading in citations.

5. Conclusions

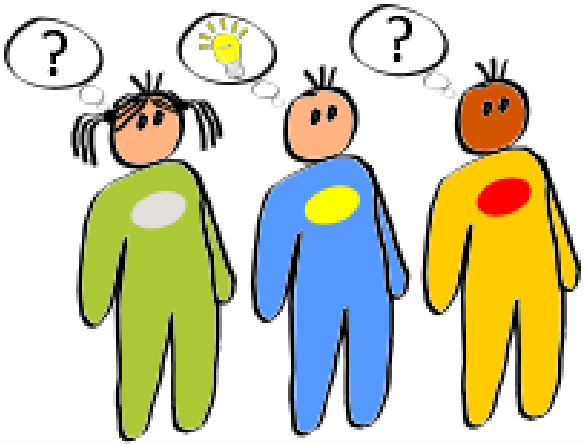
Typologies and Impact of Online Teaching in STEM Studies

- The 47 research papers can be classified into four typologies: **students, teaching methodologies, academic staff,** and **IT technologies**.
- **Online teaching empowers students**, providing them with active roles, increased interaction, and access to abundant resources, enhancing their digital skills and ability to communicate effectively.
- **Teaching staff** in the online environment play a **crucial role in guiding and supporting students**. Present research focuses on methodologies and the satisfaction of teaching staff, comparing online practices with traditional face-to-face classes.
- An **effective information technology system is essential** for a seamless, interactive virtual environment, enabling successful teaching and learning experiences.

5. Conclusions

- In summary, while online learning **literature is growing** post-COVID-19, **challenges persist**. Adapting distance education to learner needs is crucial, **avoiding generic methods**. Understanding teachers' readiness and exploring the interplay between teaching methodologies and information systems is essential for a holistic perspective.

Thank you for your attention!



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