

Centre for Learning & Teaching

Report 2022-2024





**university of
 groningen**

**faculty of science
 and engineering**

**centre for learning
 and teaching**

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Introduction

More than ever, it is time to re-imagine the future(s). Science education has a responsibility in supporting not only the re-imagining of the future but to also shaping the future by responding to urgent challenges, such as climate crises, disinformation and polarization, responsible design and use of intelligent technologies, and planetary health, just to name a few.

Through our work at the Centre for Learning and Teaching we have grappled with the question of *how can we promote learning to live with the world* instead of attempting to dominate it, as a way of responding to current global challenges. In doing so, through our teaching, research, and professional development we share our vision of how could science education help us in forming new relationships with the human, more-than-human, and non-human world.

We frame our practices in culturally sustainable pedagogies & pedagogies of care and resistance. We engage in designing curricular and interventions in various intentionally curated contexts, both in schools, the university, but also in everyday life spaces for the purpose of supporting different ways of being and becoming in science. We approach intelligent technologies with criticality and humility and we strive in ensuring a more critical, agentic, and fair utilization of AI systems and tools in science education.

We kick off 2025 with 2 new EU-funded projects, the *ACT-AI Academy: Critical AI Literacy for Higher Education* (1.5 million euro) and *Picture Your Path: Fostering gender equity in ICT study and career choice* (979.000 euro) and we remain committed to our core vision.

In the past two years, we worked with you - *colleagues and friends from different parts of the world* - for the purpose of re-imagining the future(s) and the role of science education in shaping the futures we desire through an ecological approach that has interconnectedness and social justice at its core.

Thank you for joining us, for lifting us, for inspiring us!

With gratitude,



Lucy Avraamidou

1 | *Mission, Values, and Goals*

Mission

The Centre for Learning and Teaching (CLT) aims to enhance the quality of education at the Faculty of Science and Engineering (FSE) by promoting innovative education and professionalization. Its mission is to support lecturers, to promote student engagement and learning, and foster an inclusive community that utilizes contemporary learning theories, evidence-based education, teaching innovations, and interdisciplinarity.

Values

- **Learner-centered education:** we promote teaching approaches that place the learners at the center and support them to take active roles and responsibilities
- **Innovative education:** we promote cutting-edge instructional methods, strategies, curriculum materials, and technology tools
- **Evidence-based education:** we promote educational practices that are rooted in contemporary educational research
- **Inclusive and equitable education:** we promote the design of inclusive and equitable learning spaces that capitalize on the value of diversity

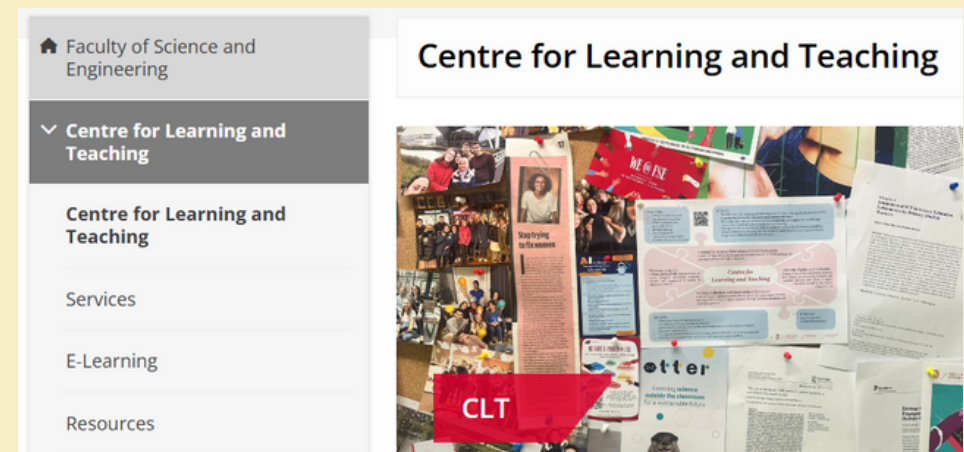
Goals

The Centre aims to support the Faculty of Science and Engineering's strategic vision on education by:

- Serving as a platform for resources, partnerships, and support related to science and engineering education
- Providing advice, guidance, and professionalization on teaching innovation and inclusion
- Providing opportunities for staff to engage in educational research endeavors

Website

rug.nl/fse/clt



Who are we?

prof. Lucy Avraamidou	Director Professor
dr. Sofie Van den Eynde	Team leader Educational Developer
Eloïse Daumerie	Team leader Trainer
dr. Han van der Strate	Team leader Educational Developer
Anne Koster	Management Assistant
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P. D. (Putri) Sundari	PhD Student
B. (Bianca) Hipolito de Oliveira	PhD Student

K.M. (Nelly) Marosi	PhD Student
C. (Chara) Bitsaki	PhD Student
Y. (Yang) Zhang	PhD Student
prof. dr. M.J. (Martin) Goedhart	Professor Emeritus
L.T.J. (Lemke) Kraan	Lecturer, Programme Director MSc Science Education and Communication
L.R. (Renée) Lutke	Lecturer
dr. E. (Edith) Koh	Educational developer
dr. A.M. (Agata) Szperl	Educational developer
dr. M. (Miquel) Pérez Torres	Educational developer
dr. Ferdinand van der Graaf	Educational developer
ir. J.E. (Enno) van der Laan	Educational developer
A.R.O. (Ruben) Comadina Granson	Intercultural Competences trainer
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dr. W. (Wenwen) Diao	Project Manager
T.A. (Tom) Middelburg	Academic Advisor
I.T.M. (Inez) Wasser	Student Affairs Officer

2 | *MAMMOth: Multi-Attribute, Multimodal Bias Mitigation in AI Systems*

Duration: 2022-2025

Budget: 3.3 million euros

Website: [Mammoth-ai.eu](https://mammoth-ai.eu)



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Objectives:

Redefine bias based on multiple (protected) characteristics instead of a single attribute.

Create standardized AI solutions to address bias across all phases of development of AI systems.

Develop and advance new technologies to evaluate and mitigate AI bias.

Ensure reliability, traceability and explainability of AI solutions.

Increase availability and deployment of unbiased and bias-preventing AI solutions.

Increase awareness and skills preventing AI bias and the uptake of the MAMMOth solutions by involving affected stakeholders.

Advance European approach to excellence in AI.

Study AI biases in case-by-case basis – providing insights on high risk applications.

Output:

Provide a single-entry point for bias evaluation and mitigation solutions, with guidance on protected characteristics for developers. Develop tailored approaches to specific domains, exploring similarities and differences across a range of sectors. Create new methods to identify and mitigate bias that go beyond single protected characteristics.

Improve financial inclusion: identify socio-economic factors (gender, ethnicity, orientation) in credit scoring and debt repayment and help build unbiased AI models. Improve social inclusion: improve accuracy of AI algorithms for identity authentication, considering age, skin colour and ethnicity.

Engage with underrepresented groups and relevant CSO to identify areas of bias. Increase awareness, and provide information on bias types and fairness across MAMMOth use cases.

Provide training to technology providers and educators on algorithmic and societal bias in AI, integrating ethical AI practices.



2 | OTTER: Outdoor Science Education for a Sustainable Future

Duration: 2021-2024

Budget 1.6 million euros

Website: otter-project.eu



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Objectives

Promote EOC: Make Education Outside the Classroom a standard, accredited practice in EU education.

Boost Learning: Enhance students' skills and engagement through hands-on, real-world learning experiences.

Provide Resources: Develop toolkits and training materials to support EOC activities in schools.

Advance Sustainability: Integrate environmental education and sustainability practices into EOC activities.

Outcomes

- **The Hub:** monthly meetings will be organised with the Hub members to gather experiences, best practices and their Education Outside the Classroom know-how, as well as challenges, questions and methodologies.
- **Learning Platform:** toolkits, guidelines and materials teachers can use when implementing Education Outside the Classroom activities.
- **The Labs:** classes in primary and secondary schools that will take part in a special 'OTTER' programme that will include activities such as a beach clean, a museum visit, an upcycling workshop and much more.
- **eTraining:** an interactive and entertaining platform where people can learn how their actions can help us live in a greener world.

2 | *ALL-INTERACT: Widening and Diversifying Citizen Engagement with Science*

Duration: 2020-2022

Budget: 1.1 million euros

Website: allinteract.eu

Objectives

- Transform citizen engagement by developing insights into how potential interest in science can be transformed into active participation, emphasizing social impacts as a motivator.
- Engage diverse societal actors by uncovering effective ways to involve various societal groups, especially young people and traditionally excluded groups, in scientific research.
- Advance sustainable development goals by focusing on supporting quality education and gender equality through increased engagement in science.
- Leverage digital technology for engagement by using social media analytics, surveys, and intervention studies to measure and encourage active engagement in science.
- Enhance science-society cooperation by fostering collaboration between scientific institutions and society, highlighting the link between scientific excellence and social impact awareness.

Outcomes

- Insights into factors that convert passive interest in science into active, meaningful involvement, particularly by raising awareness of social impacts.
- Methods and tools for involving young citizens and underrepresented groups, providing pathways to equitable scientific participation.
- Digital and interactive tools (e.g., social media insights, focus groups) to reach and engage citizens effectively.
- Creation of productive dialogues between researchers and diverse citizen groups, fostering a mutual understanding and collaboration.
- Contributions to the goals of Quality Education and Gender Equality by aligning scientific engagement efforts with these aims.



2 | *MINDGUARD: Participatory and digitally empowered mental health prevention framework for academic settings*

Duration: 2024-2027

Budget: 400,000 euros

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Objective

- Develop a comprehensive guide for university staff and educators to implement effective mental health first aid programs.
- Implement targeted training sessions for faculty, staff, and students.
- Offer a VR platform featuring training materials for immersive learning.
- Conduct dissemination activities to maximize project impact:
 - Awareness campaigns
 - Local workshops
 - Final conference in The Netherlands.

Outcomes

- Increased awareness and understanding of mental health issues among higher education students
- Enhanced student skills and confidence in providing mental health first aid.
- Improved support systems within educational institutions, leading to early intervention and better mental health outcomes for students.
- Establish a peer-to-peer support networks within the higher education institution, connecting trained students who can provide immediate assistance in times of mental health crises.

2 | *TINKER: An authentic learning and gender-inclusive framework for Informatics*

Duration: 2023-2026

Budget: 1.2 million euros

Website: tinker-project.eu



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Objectives

- Promote the use of a **pedagogical framework for teaching and assessing informatics** on the grounds of **authentic learning** and **contemporary gender inclusive practices**, in upper primary and lower secondary education.
- **Built up the capacity of teachers to create authentic learning environments**, following **gender inclusive practices** when teaching informatics.
- Support **mutual learning** across Europe, and facilitate the adoption of **evidence-based pedagogies in teaching and assessing informatics**.
- **Engage policy makers across the EU** in discussions about informatics teaching and assessment to improve teacher practices and digital skills in Europe.

Outcomes

- A framework and Toolkit for Informatics Education
- Master trainers' workshop and handbook, blended training courses for primary and lower secondary education levels
- Teacher training for authentic and gender inclusive informatics education
- eLearning platform, MOOCs and OERs for teaching informatics

2 | *INFINITE: Critical AI Use in Higher Education*

Duration: 2023-2026

Budget: 400,000 euros

Website: infinite-erasmus.eu



INFINITE
AI in Higher Education

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Objectives

- Raising awareness about the affordances and challenges of AI for stimulating innovative professional and pedagogical practices in HE.
- Developing hands-on resources for HE academics to recognize and leverage AI for their professional and pedagogical practice, considering the ethical implications.
- Building HE academics' and students' digital competences, readiness and resilience to effectively use AI with ethical responsibility and integrity, for teaching, learning and assessment.
- Promoting higher education institutions' digital transformation through capacity-building and preparedness of the HE community, to leverage AI for professional and pedagogical practices.

Outcomes

- Desk and field research mapping the landscape of AI in higher education
- AI Literacy Toolkit with a collection of 35 best case studies, readiness checklist and visualized framework for HE academics to get familiar with and select AI tools for professional and pedagogical practices
- AI Digital Hub – an interactive platform to assist HE academics with wide range of free AI-driven tools and examples for professional, teaching, learning and assessment purposes
- Faculty and student capacity-building courses on how to critically and wisely use AI for teaching, learning and assessment
- Action Plan for HEIs

2 | *UP-STEAM: Upskilling Prospective Teacher in STEAM for Elevating Out-of-school Learning for All*

Duration: 2023-2026

Budget: 400,000 euros

Website: up-steam.eu



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Objectives

- Make STEAM topics more accessible to university students and promote their interest in designing inclusive STEAM curricula for non-formal learning settings through innovative teaching practices.
- Develop university students' digital and transversal skills in designing inclusive STEAM curricula and applying them in innovative professional initiatives.
- Raise awareness among university students across Europe of the applicability of STEAM curricula in out-of-school settings.
- Encourage sharing of experiences among partners across Europe to identify best practices for integrating STEAM ideas in non-formal learning contexts.
- Facilitate the dissemination and sustainability of resources and innovative pedagogical approaches to the wider EU community and internationally.

Outcomes:

- Development and validation of comprehensive training packages that equip prospective teachers with the skills needed for STEAM education.
- Creation of a digital toolkit that provides resources and guidance for designing and delivering inclusive STEAM activities.
- Successful implementation of training programs that enable university students to apply their created STEAM activities in actual educational settings.
- Effective dissemination and communication of project outcomes.

2 | *STAGE: Scientists and Public Engagement*

Duration: 2022-2024

Budget: 250,000 euros

Website: project-stage.eu

Objectives

- Train scientists to engage public with scientific issues, concepts and actions related to climate change.
- Build the capacity of scientists to reflect critically on the social, historical, cultural and ethical dimensions of science.
- Foster scientists' writing and oral skills needed to engage with the public in various spaces, especially in relation to multi-inter-trans-disciplinary topics, like climate change.
- Improve scientists' understanding of the factors causing distrust towards scientists and disengagement with science.
- Develop scientists' understanding of how public engagement can benefit their career.

Deliverables

- **Public engagement toolkit for scientists:** 5 key readings on gender-inclusive practices; 50 practical resources for skill development in writing, public speaking, and social media for climate change; 75 best-practices for public engagement on climate change.
- **Professional development training for scientists:** enhances public engagement skills on climate change through six modules on science communication, public perceptions, social and ethical dimensions, professional growth, and sustainability issues.
- **Interactive infographics and posters** on public engagement with science, gender inclusivity, and climate change offer a modern approach to engaging the public through effective data visualization.
- **An open online platform** that offers public engagement resources for scientists, providing instant access to a comprehensive suite of gamified digital learning tools.



2 | *SMILE: Sustainable Mobility in School Education*

Duration: 2022-2024

Budget: 250,000 euros

Website: thesmileproject.eu

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Objectives

- **Build teacher capacity:** Equip educators with the tools and resources to teach climate change and sustainable mobility concepts effectively.
- **Promote sustainable competencies:** Develop students' understanding of climate change issues and the importance of sustainable mobility actions.
- **Implement the SMILE methodology:** Introduce a structured approach to teaching climate change and STEAM education through evidence-based guidelines.
- **Enhance engagement:** Create engaging educational resources that stimulate student interest and participation in sustainability initiatives.

Deliverables

- **SMILE methodology & e-Guide** with evidence-based practical guidelines for implementing activities on climate change and STEM education.
- **E-Learning space** with blended learning modules, training curricula, digital escape rooms, animation videos, and additional resources for both teachers and students.
- **Educational resources** for students, digital escape rooms and animation videos in the topics of climate change education and sustainable mobility.

2 | *STEAM4ALL: Towards an Inclusive STEAM Program for All*

Duration: 2022-2024

Budget: 288,000 euros

Website: steam4all-project.eu



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Objectives

- Encourage and motivate all students with developmentally appropriate activities for all students to be engaged in the fields of STEAM.
- Build the capacity of educators, school leaders, and school staff to organize and implement STEAM activities in schools with the use of digital tools (such as robotics) and non-digital tools.
- Develop digital skills, critical thinking, creativity, problem solving, self-esteem and collaboration to all students.

Outcomes

- STEAM4ALL Toolkit for Learners: a practical Toolkit for schools, with resources for STEAM education, research, pedagogical material, activities, and OERs.
- STEAM4ALL eLearning Platform and Blended Learning Modules: an open-access e-learning platform that will host the project results and the blended learning modules.
- STEAM4ALL Guide for Educators: a Guide composed of resources for STEAM education for daily practice in schools – reading material, STEAM reports, good practices, pedagogical resources and activities.

2 | *STEM-DIGITALIS: STEM Digital Learning in Higher Education*

Duration: 2021-2022

Budget: 288,000 euros

Website: stemdigitalis-project.eu



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Objectives

- Develop innovative digital teaching scenarios on advanced STEM topics.
- Develop teaching and learning strategies that promote meaningful use of digital technologies for teaching advanced STEM topics in blended and distance learning environments.
- Develop an open-access educational platform where digital teaching material on advanced STEM topics may be shared across Europe in diverse educational, economical, and cultural contexts.
- Develop guidelines and recommendations for teaching prospective science teachers advanced STEM topics in online environments.

Outcomes

The partnership will produce five Intellectual Outputs (IOs):

- Five digital teaching scenarios on advanced STEM topics.
- Strategies for teaching advanced STEM topics in blended and distance learning environments.
- An open educational platform and Open Education Resources on digitally supported advanced STEM topics teaching.
- Guidelines for the design and implementation of digital teaching material on advanced STEM topics.
- Recommendations for policymakers to promote teaching on advanced STEM topics in both pre- and in-service science teacher education.

2 | *GENERATION AI: Teaching Children with/about Artificial Intelligence*

Duration: 2020-2022

Budget: 275,440 euros

Website: generation-ai.eu



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Objectives

1. Support educators in understanding AI uses in everyday life.
2. Prepare educators to teach their students about AI, its applications, strengths, and weaknesses, in line with DigiComp and DigiEDU.
3. Support teachers and students in developing problem-solving skills, computational thinking and design thinking involving AI tools and methods.
4. Support teachers and students in developing their digital skills and develop a critical understanding of AI and its application to everyday life.

Outcomes

- Improved understanding of AI by teachers and students
- Improved engagement and interest of students in STEM activities
- Improved digital competences of both educators and students

Target group

- Educators: Teachers who will be trained to understand and teach AI concepts and applications.
- Young learners: Students in primary education who will gain knowledge about AI and its implications.
- Parents: Individuals who will benefit from understanding AI's impact on their children's education and daily lives.
- Policy makers: Stakeholders involved in education policy who will regulate and promote AI integration in schools.

3 | *Coordination of Educational Projects*

Professionalising Teaching Assistant (2019-2024)

- This project, part of the Quality Agreements initiative, aimed to enhance the quality of Teaching Assistants (TAs) at FSE by implementing more comprehensive training and monitoring tools. It aligned with the University of Groningen's goals of promoting small-scale education, improving student support, and advancing the professional development of teaching staff.

Kick-Off Week project (2020-2023)

- Each year, between 2020 and 2023, the CLT organized a faculty-wide introduction event for all first-year Bachelor's students (then called the Kick-Off Week- KOW). The purpose of the KOW was to help international students have a soft landing.

International Classroom Benchmarking (2019-2023)

- This project was one of the faculty-wide subprojects of the International Classroom programme. The goals of the project were to assess the degree of internationalization in the bachelor curriculum; to provide insights about the needs of the FSE community to implement the International Classroom; and to shape the future direction of the International Classroom at FSE

Intercultural Competence Training (2019-2024)

- This was a faculty-wide Quality Agreements Project which was implemented at FSE between 2019 and 2024. Its overall goal was to improve staff' and students' intercultural competences. In the summer 2024, following a request from the Steering Group Education Projects 2021-2024 the CLT issued recommendations to embed intercultural training in the organization in a cost-efficient fashion.

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3 | *Coordination of Educational Projects*

Blended Learning

- This project aims to support FSE teachers who are interested in blended learning to redesign their education in an effective way. Blended learning is an educational approach that combines face-to-face classroom instruction with online learning activities.

Critical AI Literacy

- The Critical AI Literacy (CAL) project is a faculty-wide initiative that aims to: a) design and implement a professional development training for lecturers and b) Provide guidelines to programme boards on the critical selection and use of AI tools.

Global and Intercultural Engagement Distinction

- The Global and Intercultural Engagement Distinction (GIED) project is being run as a pilot between April 2023 and 2025. The GIED is a 30 ECTS extracurricular programme which intends to prepare students for work in an international and intercultural (research) team and in an increasingly global workplace.

Internationalizing Programme Learning Outcomes

- This project is one of the faculty-wide subprojects of the International Classroom (IC) programme with the goal to provide programme boards (PBs) and lecturers with knowledge and examples on how to internationalize programme and/or course learning outcomes, and to collaborate with lecturers and programme boards to internationalize their LOs.

4 | *Education*

Science Education and Communication Master

The Master's degree programme in Science Education and Communication is a flexible, two-year programme.

Education tracks

There are five Education tracks. Students who complete the Education track are awarded a first-grade teaching qualification in physics, mathematics, chemistry, biology or computing science. In this track, coursework is combined with internships at high schools. In the courses pedagogy, didactics and class management are discussed.

You can find more information about the Master programme on [the website](#).

Communication track

The programme aims to train students in the Communication track to become professionals whose knowledge of the history and philosophy of science and the awareness of the relations between science and society enables them to form an informed and critical opinion about current developments in science, technology and science communication.

You will gain an understanding of science and the scientific process and develop research, teaching, and communication skills needed to assume a range of roles and succeed in diverse formal and informal workplaces such as science museums and centres, media, community organisations, research and academia.

The Communication track is partly bilingual: the course units are taught in English, but you can choose to do your assignments in Dutch or English for some courses.

All tracks are based on a highly interactive and interdisciplinary curriculum integrating theory, research, and practice through contemporary courses and internships.

4 | *Education*

Honours College

The Honours College FSE team offers a bachelor as well as a master programme within the Faculty of Science and Engineering. Being part of the Centre for Learning and Teaching gives the Honours College an excellent opportunity to establish an environment for teachers to implement and evaluate educational innovations. For students the Honours College is the place where they can experience research and interdisciplinary education and interact with students and staff from various faculties or companies.

Bachelor

The Honours College bachelor programme is designed for talented and motivated students who are able and willing to deepen and broaden their bachelor degree contents. It is a complementary programme of 30 EC that students can follow next to their regular degree programme. The programme has a duration of two and a half years, in which intensifying the knowledge of the student's regular degree programme mainly by doing research in the student's own field of interest and broadening of knowledge and understanding are central themes. Together with students from all faculties, they are challenged in multidisciplinary teams to look into scientific and social issues from different angles.

Master

For master students we provide the High Tech Systems and Materials Master's Honours programme. Innovation is the core of this programme. The programme has been developed in cooperation with companies of the Innovatiecluster Drachten (like Philips Consumer Lifestyle, Astron and BD Kiestra) and aims to equip talented, motivated students with the knowledge and skills needed to excel in this field of expertise.

5 | *The Future of Higher Education: Questions over Answers*

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During this event the role and future (if any) of higher education was discussed through the lens of several pertinent global issues, such as the climate crisis, standardisation, and the rise of misinformation as well problems that are closer to home such as issues related to colonialism and interationalisation.

There were multiple workshops of which one discussed how we can teach students to consciously use ChatGPT.

Another workshop unwrapped the dynamics of inclusion and exclusion and looked at how these are in play in academia.

March 16, 2023



5 | *The Role of STEM Education in a Changing World*

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The symposium offered an opportunity to disseminate curricular innovations and STEM education research projects, build community, co-learn, and form partnerships both in and outside of the university to transform STEM education.

The symposium included contributions from RUG researchers, instructors and students as well as companies, museums, and freelancers in different formats: panel discussions, talks, workshops, science cafes, and poster presentations.

February 20, 2024



5 | *AI in Education*

The event featured a panel of experts and multiple workshops addressing the educational, linguistic, ethical, and technical aspects of AI tools in education.

The workshops engaged the audience with tasks ranging from how to talk to a Chatbot, using generative AI tools for writing, to designing lessons plans with the use of AI.

April 25, 2024.



The poster is for an event titled "AI in Education: Perspectives from Arts and FSE". It features a blue background with a white robot holding a tablet displaying a bar chart. The event is scheduled for 25 April from 13:00 to 17:00 at the House of Connections, 1st Floor. The program includes a walk-in, an opening by the vice deans of FSE and FA, a panel discussion on AI in Education, and two rounds of parallel workshops. The workshops cover topics like talking to chatbots, AI literacy, and using AI for academic writing. A QR code for registration is provided at the bottom right.

AI in Education: Perspectives from Arts and FSE

25 April 13:00 - 17:00
House of Connections, 1st Floor

Programme

12:45 Walk-in
13:00 Opening by the vice deans of FSE and FA

13:15 **AI in Education: perspectives from Arts & FSE**
Panel discussion
- Matias Valdenegro Toro, Bernoulli Institute, FSE
- Francisco Castillo Hernández, Centre for Learning and Teaching, FSE
- Ana Guerberoof Arenas, Language & Linguistics, FA
- Johan Bos, Computational Semantics, FA
Moderator: Sofie van den Eynde, Centre for Learning and Teaching, FSE

14:30 Parallel Workshops Round One

- **How to talk to a Chatbot - a beginner's tutorial for effective use of ChatGPT and other LLM's**
by Kai Yu Ma (FSE)
- **What Do We Want AI (Not) to Do?**
by Dagmar Heeg (FSE)
- **AI Literacy: Supporting the Critical and Mindful Use of Generative AI by UG Students**
by Joëlle Swart (FA)
- **LLM Workshop - Learn How To Use AI to Analyse Your Text Data**
by Michiel van der Ree (FA)

15:30 Parallel Workshops Round Two

- **How to talk to a Chatbot - a beginner's tutorial for effective use of ChatGPT and other LLM's**
by Kai Yu Ma (FSE)
- **Using Generative and Non-Generative AI Tools for Teaching and Learning Academic Writing Skills**
by Jane Mahoney (FA)
- **LLM Workshop - Learn How To Use AI to Analyse Your Text Data**
by Michiel van der Ree (FA)
- **Designing Science Lessons Through AI**
by Miquel Perez Torres (FSE)

16:30 Plenary closing and takeaways

Register here



5 | *From awareness to Action: The Role of Education in Building Sustainable Futures*

This conference brought together university educators, researchers, policymakers, and university students to discuss innovative educational strategies that drive sustainable development and climate resilience. With a focus on sustainable mobility education, we aimed to reach a broad audience within the University of Groningen, increasing synergies and familiarising participants with the objectives and results of the EU project: sustainable mobility in secondary education.

October 30, 2024.



5 | *Professionalisation & Innovation in Education*

Increasing student participation through fostering social safety in the classroom

By dr. Jessica Zweers

Active participation in lectures is essential for both the students and the lecturer. However, when lecturers adopt interactive approaches in their teaching, they often find it challenging to motivate students to actively participate in class discussions. This session explored strategies that can help lecturers foster social safety in the learning environment, thereby increasing the participation and engagement of students.

Open Education as a transformative ingredient for classroom success

By dr. Martijn Blikmans and Mira Buist-Zhuk and dr. Cato Drion

Through this session teachers got a glimpse of how open education can enrich and transform your teaching. During this interactive presentation, they got a taste of various open practices, discover effective ways to seamlessly integrate free and open educational resources into your teaching, and gained valuable firsthand insights from Cato Drion, a fellow FSE teacher who is embracing open educational resources.

Specifications grading: keeping hold of quality in a sea of quantity

By dr. Stephen Jones and Laurent Krook

Specifications Grading (Nilson, 2015) is an assessment technique where the grade reflects the amount of high-quality work that a student submits, rather than the extent to which they show they understand the material with a single summative assessment. In this session, the experience of using the Specifications Grading framework in two completely different courses was shared, one mandatory, broadly oriented, large scale bachelor course of 300+ students and an elective master course tailored to a specific topic. The instructors discussed their motivation to assess in a different way. Participants looked at how the framework can improve the teaching/learning experience for students and instructors, and also considered some of the practical issues involved in implementing the framework and designing assessments for specification grading.

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5 | *Professionalisation & Innovation in Education*

Offering A(dvanced) and B(asic) tutorials, giving students a choice

By dr. [Gerald Jonker](#) and Evie Zwijghuizen

Parallel tutorials that differentiate in level were discussed, aiming to improve the effectiveness of education. Student preparation of tutorials may be expected to increase the level of discussion and add to an atmosphere of working.

Optimizing the Practical Learning Line in Chemistry

By dr. [Niek Eisink](#) and dr. Tjalling Canrinus

Optimizing the practical learning line in chemistry created a seamless progression from introductory level to preparing students for their research internship. From simple expository experiments we progressed slowly towards inquiry-based experiments, allowing students to develop their own elements. This progression fosters a deeper understanding and prepares the students better for elements of research.

Live experiment demonstrations in physics lectures

By dr. [Robert Klein-Douwel](#)

Live demonstration of an experiment can be an attractive element of a lecture. The Physics Practical Laboratory provides assistance and equipment for this purpose, ranging from a simple spinning top to a complete experimental setup of a Physics Lab course, and recently our demonstrations activity has expanded. Live demonstrations provide a lecture element that is different from the rest. In simple form a demonstration can be used to directly show an effect or principle, but it can also be used to start a discussion with students and make the lecture interactive.

Embracing generative AI: how we can use large language models to teach better

By dr. [Kai Yu Ma](#)

Many educators worry about the impact of new AI tools on teaching. Kai believes we should focus on the opportunities these tools offer. In this talk, he showed some exciting ways AI can enhance learning and make education more engaging for everyone.

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5 | *Professionalisation & Innovation in Education*

Soft skills: integrating competencies into the course By prof. Steven Hoekstra, dr. Tanja Fens and dr. Agata Szperl

Soft skills, attitudes, and knowledge also called competencies are on the minds of teachers, educational developers, and students. Also, we can all agree that competencies are important, and looking at the 21st-century list of skills, we probably recognize and indicate them for every field. But how do we develop a course addressing leadership, communication, or scientific skills? In this seminar, examples of courses supporting the development of these skills were presented.

Introducing inquiry-based and project-based pedagogies into a course from a teacher and a student perspective.

By dr. Francisco Jose Castillo and Onno van den Hoed

In this session, we illustrated how inquiry and project-based learning pedagogical strategies can not only promote student engagement but also provide good opportunities to emphasize pedagogies of care. These pedagogies foster the creation of a safe environment and acknowledge different backgrounds and aspirations.

Research on doctoral education: What's going on?

By dr. Melina Aarnikoivu

Doctoral education and doctoral researchers are being studied around the world from a variety of perspectives. This body of research keeps evolving, as practitioners and policy-makers face new challenges. In this session some of the developments and intertwined topics of doctoral education research were discussed: publishing pressures, doctoral "success", and PhD mental health.

Improving student engagement and passing rate in lecture-based courses using MemoryLab

By prof. dr. Hedderik van Rijn and prof. dr. Barbro Melgert

MemoryLab, an adaptive learning system focusing on improving long-term retention and developed by a spin-off of the UoG, can be used to increase student engagements and exam scores, without requiring much work from instructors.

Diversity and Inclusion

I 30

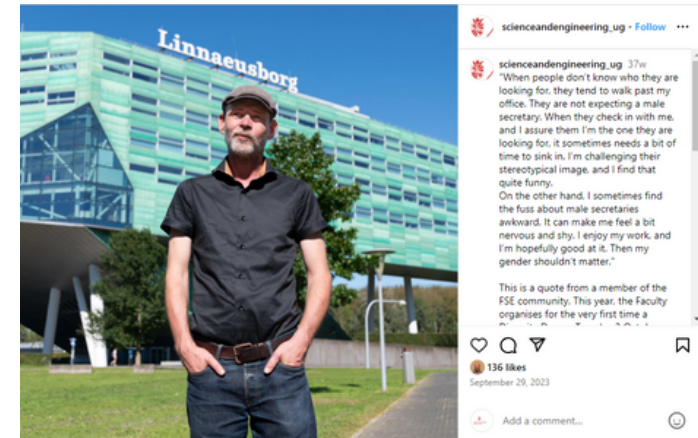
6 | We@FSE

Diversity Day 2023

On Tuesday 3 October 2023, the Centre for Learning and Teaching hosted the first Diversity Day at the Faculty of Science and Engineering.

The event was open to all students and staff from the Faculty and intended to showcase and celebrate the diversity of its community.

- Activities/ workshops : opening & story telling; photo exhibition; portrait drawing; Living Library with 'living books' on transgenderism, depression, sexuality, disability, anxiety and suicide.



6 | *We@FSE* Diversity Week 2024

From 30 September to 4 October 2024, the Centre for Learning and Teaching organized a week-long event to celebrate the diversity of its community and create more awareness at Faculty of Science and Engineering and to build student and staff skills related to diversity and inclusion.

Activities: opening & storytelling, a week-long photo exhibition, a 2 day-long information market, 4 workshops in learning materials and understanding & leveraging social advantages, 6 escape games, and a movie screening.

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AI Bias Exposition during the European Researchers' Night

September, 2024



7 | *Professional Development* For University Instructors

STEM education research: what is it & why should you care?

prof. dr. Lucy Avraamidou

In this workshop, you will develop an understanding of what constitutes STEM education research and the various methodologies typically utilised in STEM education research, identify 'selling' research ideas, and potential funding opportunities.

Group work, how to develop student collaboration skills

dr. Ferdinand van der Graaf

In this workshop, you will evaluate and reflect on current designs for group work. Based on clear criteria, we will discuss specific improvements to increase the effectiveness of group work with a focus on collaborative skills.

Deciding on AI technologies as STEM university instructors

dr. Miquel Pérez Torres

In this workshop, you will explore if available AI technologies are adding value to your courses and make sense of how to work from current guidelines on the use of AI to preserve fairness, accountability, transparency, and ethical aspects. interactions and educational settings.

Empathy before education...

Eloise Daumerie

In this workshop, we will explore the potential of empathy in fostering learning and promoting inclusion. We will also highlight the necessity of teaching and practising this life skill in higher education. Delving into non-violent communication, we will introduce participants to practical tools for empathetic connection- both in everyday

Designing for effective feedback

dr. Edith Koh

This workshop introduces lecturers to guidelines and principles for effective feedback. There will be an opportunity for participants to reflect on their own feedback practices and learn to increase the effectiveness of their feedback.

7 | *Professional Development* For University Instructors

Cultural diversity & STEM? But, science is universal!

Ruben Comadina Granson

This workshop will focus on cultural diversity in the context of STEM education. It will explore how students' diverse backgrounds influence their expectations and learning approaches and how teachers need to recognise and accommodate these differences to develop and adjust effective teaching strategies. Ultimately, this process will foster the development of teachers' own intercultural competences.

Escape Games in STEM education - Opportunities and Challenges

dr. Michael Lerch

In this workshop, we will explore the use of escape games for students to deepen their understanding in STEM courses, as part of a current Comenius project. We will discuss the role of game mechanics, how to align learning objectives and game content, and how escape games offer exciting opportunities for opening discussions on diversity and inclusion. To make it practical, participants will have the opportunity to test some of the games and even visit the pop-up escape room that is created as part of this Comenius project.

See no bias, hear no bias, speak for no change - Gender inclusive teaching

Swati Vartak

This workshop will centre on gender diversity in STEM and its implications for learning and teaching. Participants will heighten their awareness of unconscious biases associated with gender, develop their ability to identify their own biases and those of others, and learn strategies to counter the bias and ensure equitable treatment for all genders.

Increasing student learning opportunities using Blended Learning

dr. Sofie Van den Eynde

Discover how to integrate in-class and online activities, both synchronous and asynchronous, to create rich learning experiences for your students. Learn to increase student engagement through implementing varied interactions of students with content, peers, and you, the instructor. We will dive into key principles of effective blended learning and guide you in taking the first steps to redesign your course for optimal impact.

This workshop is part of the [FSE blended learning project](#).

8 | Publications 2024

1. **Heeg, D.M., & Avraamidou, L.** (2025). Young children's understanding of AI. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-024-13169-x>
2. **Avraamidou, L.** & Torres-Olave, B. (2025). From the politics of affect to the politics of being affected by/with others. *Science Education*.
3. Torres, O. B. & **Avraamidou, L.** (2025) Critical Scientific Imagination for Transformative Agency: Pedagogies for Science Teacher Education. *Science Education*.
4. McLeod, E. & **Avraamidou, L.** (2024). Science identities: past, present and possible futures. ESERA book, Springer.
5. Grimalt-Álvaro, C.; López-Simó, V. & **Tena, È.** (2024). How do secondary-school teachers design STEM teaching-learning sequences? A mixed methods study for identifying design profiles. *International Journal of Science and Mathematics Education*, <https://doi.org/10.1007/s10763-024-10457-3>
6. **Avraamidou, L.** (2024). Can we disrupt the momentum of the AI Colonization of (Science) Education? *Journal of Research in Science Teaching*. <https://onlinelibrary.wiley.com/doi/10.1002/tea.21961>.
7. Nipyrakis, A., Stavrou, D. & **Avraamidou, L.** (2024), Examining S-T-E-M Teachers' Design of Integrated STEM Lesson Plans. *International Journal of Science and Mathematics Education*. <https://doi.org/10.1007/s10763-024-10474-2>
8. Drymiotou, I., Constantinou, C. & **Avraamidou, L.** (2024). Would a science career suit me? Students' self-views in relation to science and STEM career aspirations. *International Journal of Science Education*.
9. Nipyrakis, A., Stavrou, D. & **Avraamidou, L.** (2024). In-service teachers' views about STEM Integration: A case study. *Research in Integrated STEM Education*.
10. Marosi, N., **Avraamidou, L.**, & López, M. L. (2024). Queer individuals' experiences in STEM learning and working environments. *Studies in Science Education*. <https://doi.org/10.1080/03057267.2024.2313903>
11. **Tena, E., Castillo-Hernández, F. J.**, Martín-Peciña, M., Rodríguez-Ortega, P. G. (2024). What have we learned from Jordi Domènech about STEM/STEAM? *Aula de Innovación Educativa (¿Qué hemos aprendido de Jordi Domènech sobre STEM/STEAM?)*
12. **Castillo-Hernández, F. J., Pérez-Torres, M.** (2024). A STEM proposal to address climate change. *Aula de Innovación Educativa (Una propuesta STEM para combatir el cambio climático)*
13. **Pérez Torres, M.**, Couso Lagarón, D., & Marquez Bargalló, C. (2024). Evaluation of STEAM Project-Based Learning (STEAM PBL) Instructional Designs from the STEM Practices Perspective. *Education Sciences*, 14(1), Article 53. <https://doi.org/10.3390/educsci14010053>
14. Nipyrakis, A., Stavrou, D., & **Avraamidou, L.** (2024). In-Service Teachers' Views about STEM Integration: A Case Study. *Research in Integrated STEM Education*, 2(2).
15. Fens, T., Moermond, C.T.A., van der Maas, P., Dantuma-Wering, C., Lestestuiver, G.H., **Szperl, A.**, Schuiling, L.C.M., Hak, E., Taxis, K. (2024) Reducing Pharmaceuticals in Water, a New Module Integrated in the Pharmacy Game: Evaluating the Module's Effects on Students' Knowledge and Attitudes. *Pharmacy* 2024, 12, 28. <https://doi.org/10.3390/pharmacy12010028>
16. **Silveri, L.** (2024). Board games for citizenship education, insights from the experience of YouTopia LAB. In S. Langer, E. Agostini, D. Francesconi, & N. Zambaldi (Eds.), *PEA – Pedagogy, Ecology and the Arts: polis*. Pp. 118 -125. FrancoAngeli: Milano. DOI: <https://doi.org/10.3280/oa-1181>
17. Drius, M. & **Silveri, L.** (2024). Green infrastructure for ecosystem resilience. *Open Access Government*. <http://dx.doi.org/10.56367/oag-041-11291>

8 | Publications 2023

1. Lederman, J. S., Bartels, S., Jimenez, J., Lederman, N. G., Acosta, K., Adbo, K., Akerson, V. L., Andrade, M. A. B. S. D., **Avraamidou, L.**, Barber, K.-A., Blanquet, E., Boujaoude, S., Cardoso, R., Cesljarev, C. D., Chaipidech, P., Connolly, C. P., Crowther, D. T., Das, P. M., Dogan, Ö. K., ... Zhu, Q. (2023). Completing the progression establishing an international baseline of primary, middle and secondary students' views of scientific inquiry. *International Journal of Science Education*. <https://doi.org/10.1080/09500693.2023.2256458>
2. **Heeg, D. M.**, & **Avraamidou, L.** (2023). The use of Artificial intelligence in school science: a systematic literature review. *Educational Media International*, 60(2), 125-150. <https://doi.org/10.1080/09523987.2023.2264990>
3. Gonsalves, A. J., Danielsson, A. T., **Avraamidou, L.**, Nyström, A.-S., & Esquivel, R. (2023). Using story-based methodologies to explore physics identities: How do moments add up to a life in physics? *Physical Review Physics Education Research*, 19, Article 020106. <https://doi.org/10.1103/PhysRevPhysEducRes.19.020106>
4. Tzortzoglou, F., Kosmas, P., & **Avraamidou, L.** (2023). Design of a location-based augmented reality game for the development of key 21st century competences in primary education. *Contemporary Educational Technology*, 15(3), Article ep432. <https://doi.org/10.30935/cedtech/13221>
5. **Nipyrakis, A.**, Stavrou, D., & **Avraamidou, L.** (2023). Designing technology-enhanced science experiments in elementary teacher preparation: The role of learning communities. *Research in Science & Technological Education*. Advance online publication. <https://doi.org/10.1080/02635143.2023.2202386>
6. van der Leij, T., Goedhart, M., **Avraamidou, L.**, & Wals, A. (2023). High school biology students' use of values in their moral argumentation and decision-making. *Journal of Moral Education*. <https://doi.org/10.1080/03057240.2023.2185595>
7. van der Leij, T., Goedhart, M., **Avraamidou, L.**, & Wals, A. (2023). Designing a module for supporting secondary biology students' morality through socioscientific issues in the human-nature context. *Journal of Biological Education*. <https://doi.org/10.1080/00219266.2023.2174160>
8. Danielsson, A., **Avraamidou, L.**, & Gonsalves, A. (2023). *GENDER MATTERS: Building on the Past, Recognizing the Present, and Looking Toward the Future*. In Handbook of Research on Science Education: Volume III (1st ed., Vol. 3, pp. 263-290). Taylor and Francis Inc.. <https://doi.org/10.4324/9780367855758-12>
9. Bargiela, I. M., Puig, B., Blanco-Anaya, P., & **Avraamidou, L.** (2023). Inquiry and Argumentation Practices Enacted by Early Students in an Inquiry Cycle About Gravity and Air Friction. In G. S. Carvalho, A. S. Afonso, & Z. Anastácio (Eds.), *Fostering Scientific Citizenship in an Uncertain World* (pp. 183-199). (Contributions from Science Education Research, Vol. 13). Springer Science and Business Media B.V.. https://doi.org/10.1007/978-3-031-32225-9_12
10. **Avraamidou, L.** (2023). Science is for everyone: Possible futures, possible selves. (Inaugural Lectures). University of Groningen Press. <https://doi.org/10.21827/64b546f09021e>
11. **Oliveira, B.H.**, & Bizerra, A. (2023). Social participation in science museums: a concept under construction. *Science Education*. <https://doi.org/10.1002/sce.21829>
12. **Silveri, L.** (2023). Introducing Game Jams for Ecology and Citizenship Education in High School Classes. *Proceedings of the 17th European Conference on Games Based Learning*, 7(1), pp 592-598. DOI: [10.34190/ecgbl.17.1.1614](https://doi.org/10.34190/ecgbl.17.1.1614)



Conferences

9 | Keynotes and Invited Talks

1. **Avraamidou, L.** (2024, November). Re-imagining STEM education for more hopeful futures. Keynote talk at the annual conference of STEM education, Thessaloniki, Greece.
2. Torres-Olave, B. & **Avraamidou, L.** (2023, November). Imagining sustainable futures: The role of public pedagogies and out-of-school science. Keynote talk at the international conference of STEM Education, Pakistan.
3. McLeod, E. & **Avraamidou, L.** (2023, August). Identity-based research in science education. Keynote talk at the bi-annual conference of the European Science Education Association (ESERA). Istanbul, Turkey.
4. **Avraamidou, L.** (2024, February). Imagining sustainable and socially-just futures: the role of out-of-school science. Keynote talk at the conference of the H2020-Out-of-school-science for sustainability, Brussels.
5. **Gharesifard, M.** (2023, November). From Observations to Change Making: Exploring the Multi-Faceted Impact of Citizen Science, Invited keynote speech at SLA participatie dag 2023 organized by RIVM, Bilthoven
6. **Avraamidou, L.** (2023, April). Gender matters in science education: A critical synthesis of the literature. Invited talk at the 1H4Girls in STEM, Online Event.
7. **Avraamidou, L.** (2023, August). Cultural studies in Science Education: Imagining more sustainable and socially just futures. University of Thailand, online event.
8. **Avraamidou, L.** (2023, September). Science is for everyone: Possible futures, possible selves. Public Inaugural Lecture at the University of Groningen.
9. Torres-Olave, B. & **Avraamidou, L.** (2024, January). Science communication for social justice. Keynote talk at the STAGE (scientists and public engagement) symposium. Groningen, NL.
10. **Avraamidou, L.** & Torres-Olave, B. (2024, March). Critical pedagogies for socially-just futures. Invited talk at the Department of Education, Brunel University, London.
11. **Heeg, D.M.** (2023, October). Critical use of ChatGPT. Invited talk at Cool Kunst en Cultuur. Heerhugowaard, Groningen.
12. **Heeg, D.M.** (2024, March). Critical use of ChatGPT. Invited talk at UMCG. Groningen, NL.
13. **Heeg, D.M.** (2024, June). AI Dilemmas: developing an interactive traveling exhibition. Invited talk for the Jantina Tammes School of Digital Society, Technology, and AI.
14. **Castillo-Hernández, F. J.** (2024, April). The future of teaching: Teachers and AI - Partners or Rivals? Invited panelist at the University of Groningen, Groningen: Netherlands.
15. **Castillo-Hernández, F. J.** (2024, May). Introducing inquiry-based and project-based pedagogies into a course from a teacher and a student perspective. University of Groningen, Groningen: Netherlands.
16. **Perez Torres, M.** (2024, April). Unlocking the power of AI in Academia: Tools and Ethical insights. Groningen Organisation for PhD Education and Recreation. Netherlands
17. **Gharesifard, M.** (2023, June). Citizen science: engaging people for a greener future, Invited panelist at Brussels Urban Summit, Brussels, Belgium.
18. **Gharesifard, M.** (2023, June). Citizen Science for environmental management: applications and challenges, Invited presentation at IREES Colloquium, University of Groningen.
19. **Gharesifard, M.** (2024, March). Citizen science for water and environmental management: from engagement to impact, invited online academic seminar, UNU-FLORES.
20. **Gharesifard, M.** (2024, June). Bridging Gaps: The Synergy Between Citizen Science and Science Communication, SciCom NL Online seminar
21. **Gharesifard, M.** (2024, September). Citizen science for water and environmental management: from engagement to impact, invited online academic seminar, IIASA WATER security research group.
22. **Gharesifard, M.** & Michorius, L. (2024, November). Introduction to citizen science: foundations, practices, and researcher competencies, NWO Talent Day 2024, Utrecht.

10 | Conference Presentations

1. **Castillo-Hernández, F. J.** (2024, February). *Artificial intelligence for professional and pedagogical practices in higher education*. The Role of STEM Education in a Changing World, Groningen, Netherlands.
2. van den Hoed, O. C., & **Castillo-Hernández, F. J.** (2024, February). *Innovative approaches to in-service training: A training course for technical workers in the Netherlands*. The Role of STEM Education in a Changing World, Groningen, Netherlands.
3. **Castillo-Hernández, F. J.**, Jiménez-Liso, M. R., Couso, D. (2024, April). *Teaching and learning sequences on the floating and sinking phenomenon: an evidence-based comparison*, National Association for Research in Science Teaching, Denver, Colorado.
4. Michorius, L., **Castillo-Hernández, F. J.**, & **Pérez-Torres, M.** (2024, September). *Enhancing AI literacy among educators: A piloting study*. Unveiling the future of learning & artificial intelligence, Nicosia, Cyprus.
5. **Pérez-Torres, M.**, **Castillo-Hernández, F. J.** (2024, September). *Fostering Critical AI Literacy in STEM Education: A Co-Design Approach to Developing Vision Documents and Workshops*. Unveiling the future of learning & artificial intelligence, Nicosia, Cyprus.
6. Nipyrakis, A., **Avraamidou, L.**, Friege, G., McLoughlin, E., Reiska, P., & Stavrou, D. (2024, March 17-20). *Developing Digital Education Readiness in Tertiary Education: The STEM Digitalis project*. [Poster presentation]. National Association for Research in Science Teaching (NARST), Denver.
7. Nipyrakis, A., Stavrou, D., & **Avraamidou, L.** (2023, August 28-September 1). *In-Service Teachers' Collaborative STEM Design Practices*. European Science Education Research Association (ESERA) Conference, Cappadocia.
8. **Nipyrakis, A.**, & Branchetti, L. (2023, August 28-September 1). Epistemological Issues in Interdisciplinary Teacher Education: Curricular Topics and Emerging Fields. In Branchetti, L., Levrini, O., & Barelli, E. (Chairs). *Balancing Disciplinary and Interdisciplinary Competences: Theoretical and Empirical Results of the Design of Modules for Teacher Education* [Symposium]. ESERA Conference, Cappadocia.
9. Michailidi, E., McLoughlin, E., **Nipyrakis, A.**, Kokolaki, A., Friege, G., Reiska, P., & Stavrou, D. (2023, August 28-September 1). *Digital Teaching Scenarios on Advanced STEM Topics for Higher Education*. ESERA Conference, Cappadocia.
10. **Bitsaki, C.**, Kokolaki, A., Nipyrakis, A., Metaxas, I., Michailidi, E., & Stavrou, D. (2023, August 28-September 1). Pre-Service Teachers' Perspectives on Boundary Objects in a Nanotechnology Module. In Branchetti, L., Levrini, O., & Barelli, E. (Chairs). *Balancing Disciplinary and Interdisciplinary Competences: Theoretical and Empirical Results of the Design of Modules for Teacher Education* [Symposium]. ESERA Conference, Cappadocia.
11. Kokolaki, A., Azevedo, N., H., Barelli, E., **Bitsaki, C.**, **Avraamidou, L.**, Michailidi, E., Rokos, L., Stavrou, D., Tasquier, G. (2023, August 28-September 1). Scientists and Public Engagement with Climate Change. Poster presentation at the 15th ESERA Conference, Cappadocia.
12. **Nipyrakis, A.**, Barquero, B., Branchetti, L., Durand-Guerrier, V., Kokolaki, A., Stavrou, D., Levrini, O. (2023, April 18-21). *Interdisciplinary Pre-service Teacher Training*. [Poster presentation]. National Association for Research in Science Teaching (NARST), Chicago.
13. Nipyrakis, A., Stavrou, D., & **Avraamidou, L.** (2023, April 18-21). *Integrated STEM Design and Implementation: A case with In-service Teachers*. National Association for Research in Science Teaching (NARST), Chicago.

14. **Gharesifard, M., Avraamidou, L.,** & Vlasakidis, C. (2024, March 25-28). *Upskilling Prospective Teachers in STEAM for elevating out-of-school learning for all (Up-sTEAm)*, Erasmus+ project presentation at TAG Education Festival 2024: Culture, Context & Collaboration, Groningen, The Netherlands.
15. **Gharesifard, M.,** Vivas Lalinde, I., & Flanagan, B. (2024, April 2-6). *A competency framework for digital inclusion in citizen science*, 5th Conference of the European Citizen Science Association & 9th Austrian Citizen Science Conference (ECSA/ÖCSK 2024), Vienna, Austria.
16. **Cernei V.,** Dillon, J., Achiam, M., & Masserani, L. (2023, June 14-17). *Towards Epistemic Justice in Science Communication*. Conference session at the European Science Engagement Conference ECSITE 2024, Valletta, Malta.
17. **Oliveira, B. H.,** Soares, M.O., Bizerra, A. F., Bezzon, R. (2023). Family Participation in Science Communication about Autism Spectrum Condition. In *PCST Conference Creating a Common Ground proceedings*. p.264. Rotterdam, Netherlands.
https://pcst2023.nl/wp-content/uploads/2023/04/PCST2023_BookofAbstracts_complete_April.pdf
18. **Oliveira, B. H.,** Azevedo, N. H. (2023) Empowering university students through infographic mastery: unleashing the skills of visual communication. In *ENLIGHT Teaching & Learning Conference: empowering students for tomorrow proceedings*. Bordeaux, France
19. **Bitsaki, C., Castillo-Hernández, F. J., Avraamidou, L.,** (2023, November 11-12). Developing STEAM Teaching Materials to Raise Student Awareness of Climate Change and Sustainability: The SMILE project. Poster presentation at the 13th Panhellenic Conference for Science Education and Technology in Education, titled "Innovation and Research in Learning, Teaching and Technology in Science.". Ioannina, Greece
20. **Bitsaki, C.,** Metaxas, I., Kokolaki, A., Stavrou, D., Levrini, O., (2023, November 11-12). "Investigation of the interdisciplinary STEM integration in a teaching module regarding Climate Change by pre-service teachers". Presentation in a symposium at the 13th Panhellenic Conference for Science Education and Technology in Education, titled "Innovation and Research in Learning, Teaching and Technology in Science". Ioannina, Greece
21. **Bitsaki, C., Avraamidou, L.,** Stavrou, D., (2024, August 26-30). Secondary pre-service teachers' perspectives on Climate Change as a complex system: the role of Identity. Presentation in a symposium accepted by the upcoming 4th World Conference on Physics Education, organised by International Group on Physics Teaching (GIREP), Krakow, Poland
22. **Silveri, L.,** & Drius, M. (2024, July) Packing ecology principles and sustainability challenges into an educational game. The FRACTAL game experience. ERIDOB 4th conference of European Researchers in Didactics of Biology - Lyon (France)
23. **Sholihah, W., Gharesifard, M.** (2024, September 10th). Smart aquaculture: research design for a participatory water quality monitoring system for arowana fish cultivation, The 4th International Conference on Applied Sciences (ICAS) 2024, Bogor, Indonesia.
24. Pospig, J., **Gharesifard, M.,** Alberts, N. (2024, November 13-14). Unraveling the Motivations and Barriers of Citizen Science Participation, OpenLab.brussels conference on Creating Knowledge Through Participatory Research, Brussels, Belgium.

11 | *Contact Information*

Interested in collaborating with us? Contact us!

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