SCIENCE ON STAGE EUROPE

THE EUROPEAN NETWORK FOR SCIENCE TEACHERS

Teachers Empowering Teachers: Transforming Science Education Through Peer-Led Training

Science on Stage Europe e.V.

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Introduction

- Science on Stage Europe is a non-profit initiative
- Focuses on empowering STEM teachers through peer-led training
- Operates in 35 countries, reaching 100,000 educators
- Founded in 2000
- Funded by industry partners
- Encourages creativity, collaboration, and hands-on learning

35 member countries - scaling up

- National Steering Committees
- They organise national teacher training, festivals etc.
- Our network relies on the volunteer work of hundreds of excellent teachers
- Find your country on www.science-on-stage.eu/countries

Teachers make the difference – Our goals

- **Enabling** the exchange of teaching concepts
- **Motivating** teachers with a platform for ideas
- **Connecting** educators to foster new projects
- **Supporting** continuous professional growth

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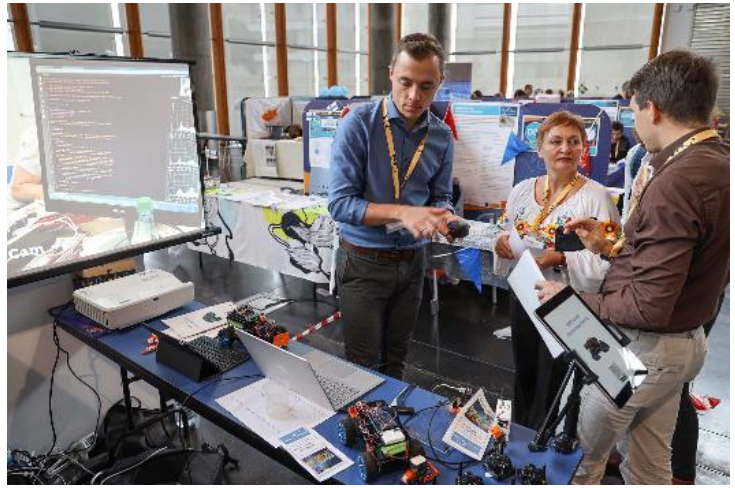
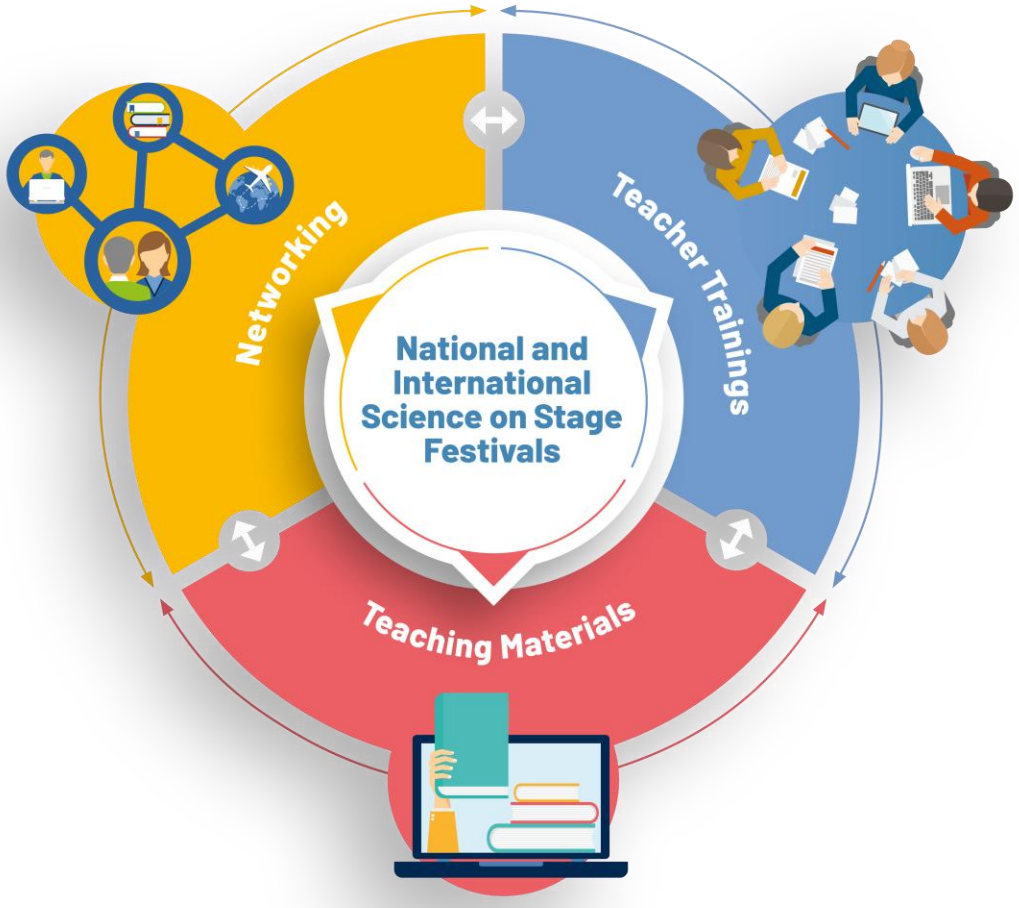
Our unique selling points

- From teachers for teachers
- International and personal exchange
- Long-term approach: initiative, not just a project

- www.youtube.com/watch?v=i96jKJ6J17E



How Science on Stage works



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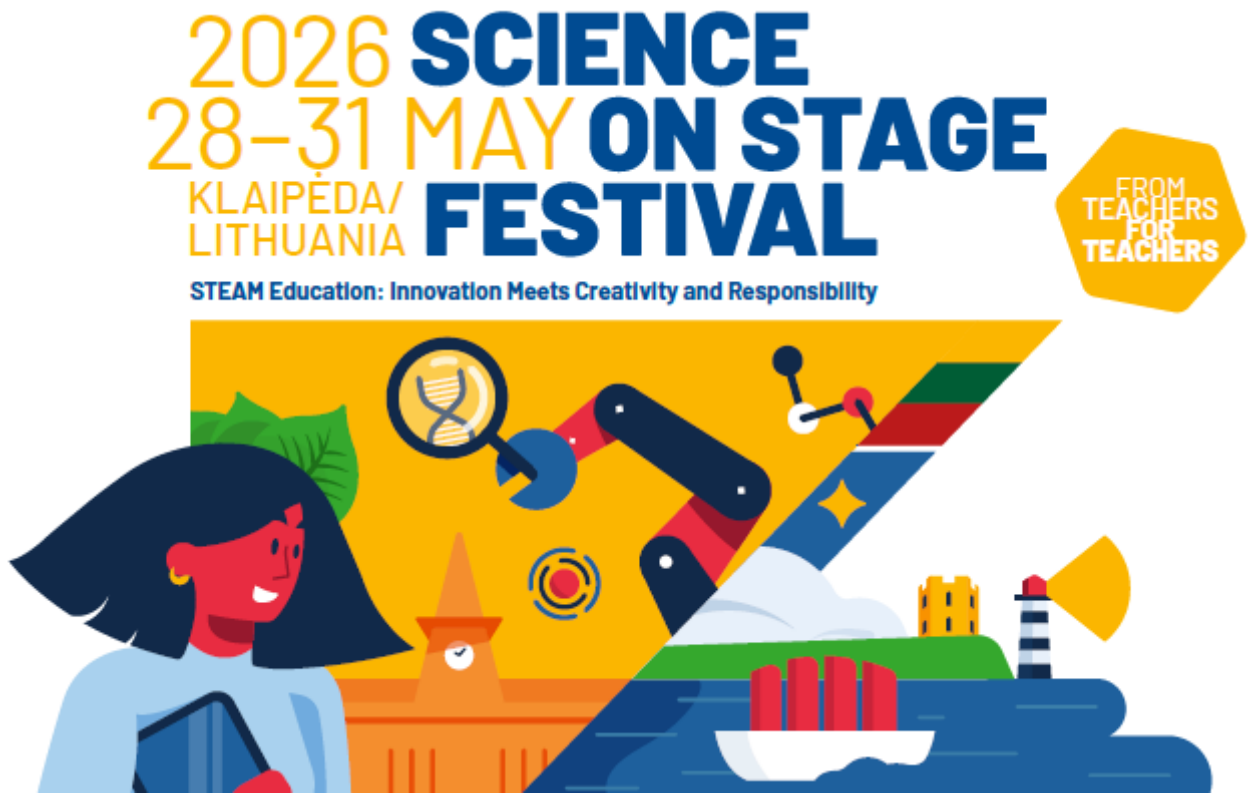
Science on Stage festival 2026

- 450 STEM teachers (primary - secondary level) from over 30 countries
- Teachers apply in their countries – www.science-on-stage.eu/countries
- Aims: learn from each other, gain new ideas, teachers' professional development



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450 teachers

30+ countries

Europe's **biggest science teachers' festival**

100+ **workshops** across Europe each year

International **teacher trainings**

DISSEMINATION

DISSEMINATION

90 % of the teachers have **implemented ideas from the festival** at their school

30,000+ **dissemination per year** (online and print)

Teaching material about topics such as coding or the Sustainable Development Goals in STEM education

16 languages

90 % of participating teachers have **incorporated ideas** they had acquired through **Science on Stage events** into teacher training in their home countries and thus **functioned as multipliers**.

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Teachers Empowering Teachers: Through Peer-Led Training – Why?

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Teacher Training in STEM Education - Challenges

- Lack of time
- Rigid curricula
- Lack of practical and curriculum-aligned materials
- Difficulty in integrating new topics
- Limited opportunities for teacher collaboration
- Need for creative methods
- Changing educational landscape
- Changing world

Regular Teacher Training

- Often top down
- Bringing experts from outside using a one-size-fits-all approach
- Lack of practical and curriculum-aligned materials/approaches
- Teachers' voices often not heard

Peer-Led Training – Characteristics

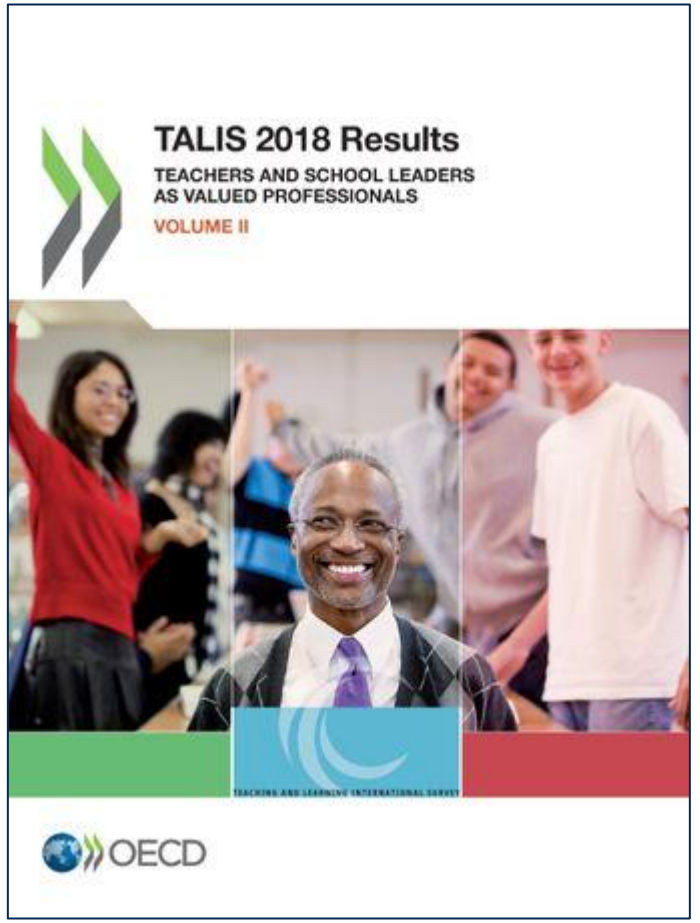
- Teachers learn best from each other
- Encourages sharing of best practices, challenges, and solutions
- Moves away from top-down training models
- Creates a community of collaborative learning and innovation

Why Peer-Led?

- Research by Boyle et al. (2005) found that teachers considered observing colleagues (72%) and sharing best practices (62%) to be the most popular long-term professional development activities.

Why exchange?

- "[…] teachers who regularly collaborate with peers […] also tend to report using cognitive activation practices more frequently in class. Professional collaboration is also associated with **higher job satisfaction** and **teacher self-efficacy**. […] On average across OECD countries and economies in TALIS, **71% of teachers who received feedback from colleagues found it useful for their teaching**."



Science on Stage Solutions

- Offer a platform to gain new skills
- Exchange best practice ideas
- From teachers for teachers
- Foster sense of community
- Open educational resources
- International networking opportunities
- Encourages peer-led training and mentoring
- Supports inquiry-based and interdisciplinary learning

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Teachers Empowering Teachers: Through Peer-Led Training – How?

Practical examples and evaluation

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Example: AI in STEM Education

- 5 units developed **by teachers from different countries**
- Understanding, applying and coding AI and machine learning
- Free open educational resources
- Easy to implement, from one hour to a project course
- Connected to every day live
- Supported by: amazon future engineer

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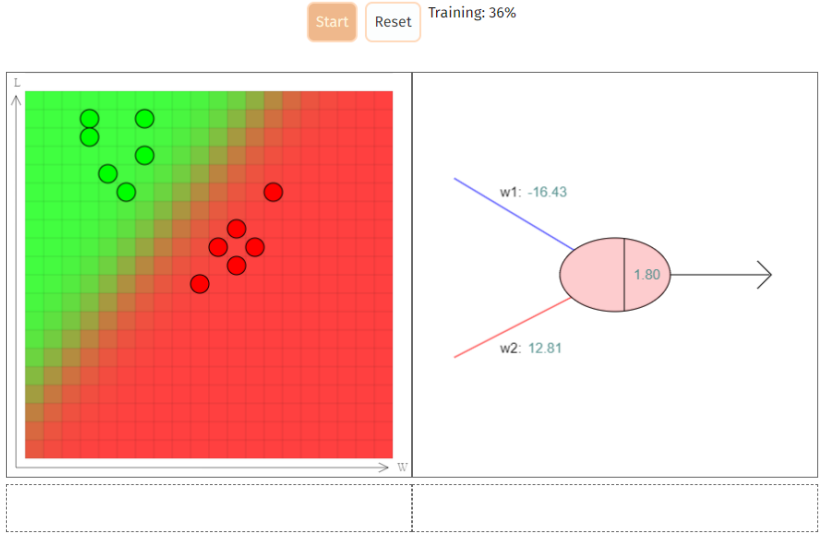
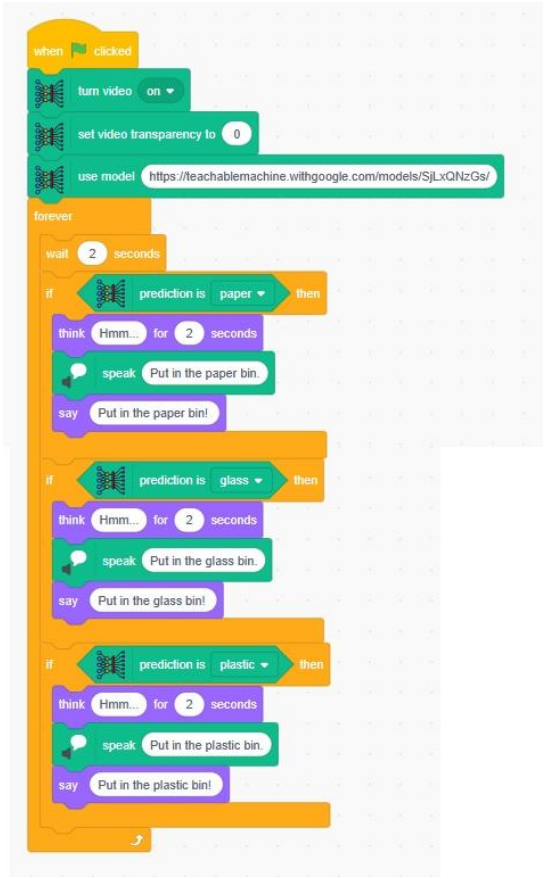
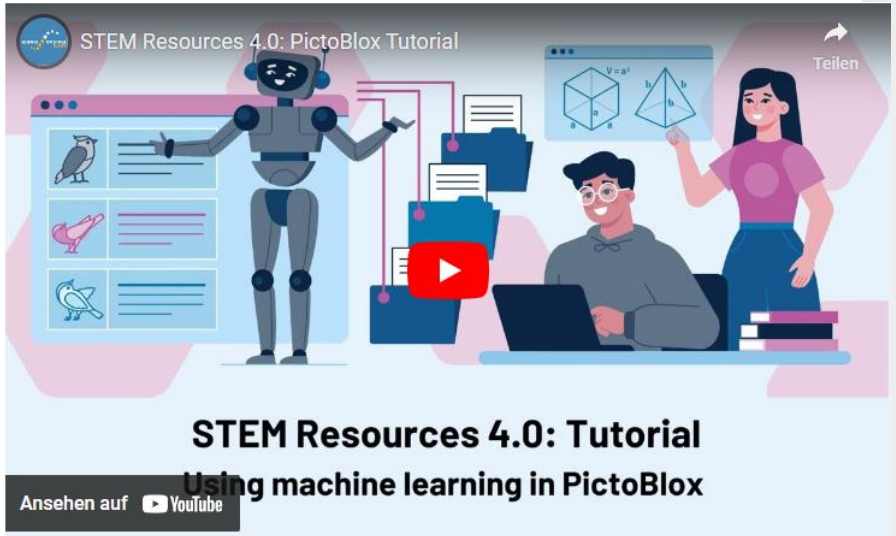
Practical classroom-tested ideas

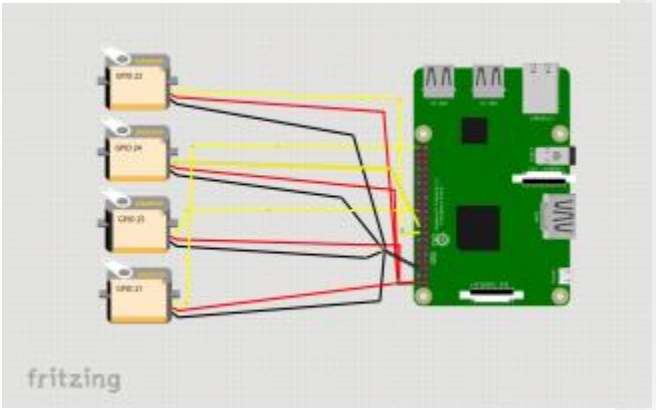
- Activities **for all STEM subjects** and **project-based learning**
- **Interactive** exercises and simulations
- **Coding projects** (Scratch/PictoBlox, Python)
- Worksheets and **sample files** for download
- **Tutorial videos**
- Resources for **career orientation**
- Background information on AI in education
- Available in English and German, translatable via web browser
- www.science-on-stage.eu/ai-stem-education

Resources and supplementary material









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Example: Peer-Led Training / Webinars

- Speakers = Teachers
- Topics: Science and Magic, Food & STEM
- Concrete, hands on experiments
- For free, everyone can join in

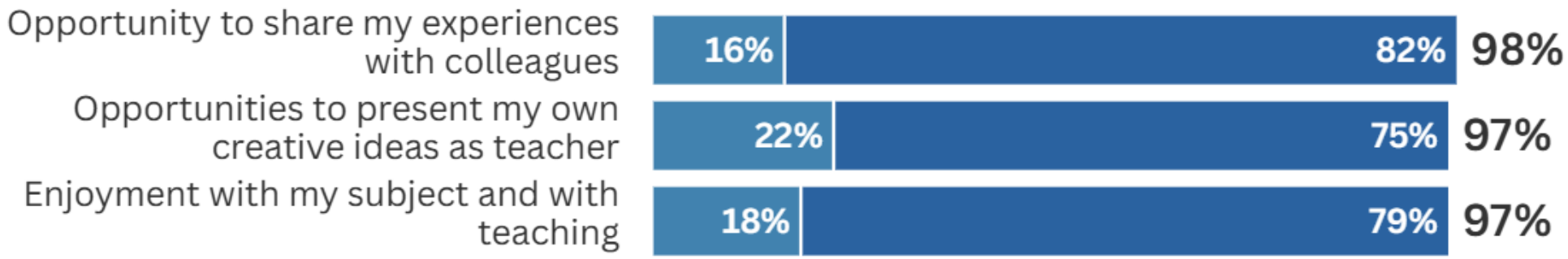
Quote

And the **best way to boost motivation is meeting and sharing with colleagues**, something that AI will never provide educators with, whilst SonS does. [….] If I look back to my career the SonS festivals have been the highest point in terms of enthusiasm, eagerness to learn, sharing and talking about science.”

Federico Andreoletti, STEM teacher, Italy

Evaluation*

The Science on Stage festival 2024 helps me to have more

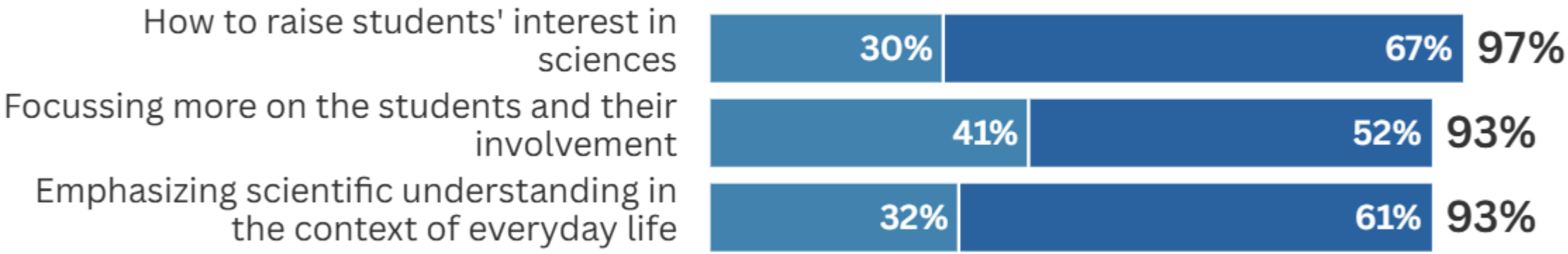


% of participants who answered on a scale (0, +, ++) with + or ++

* The survey is conducted in 3 stages: We ask the participants before, right after the festival and then one year after the festival for their feedback. It is an anonymous survey, GDPR compliant.

Evaluation

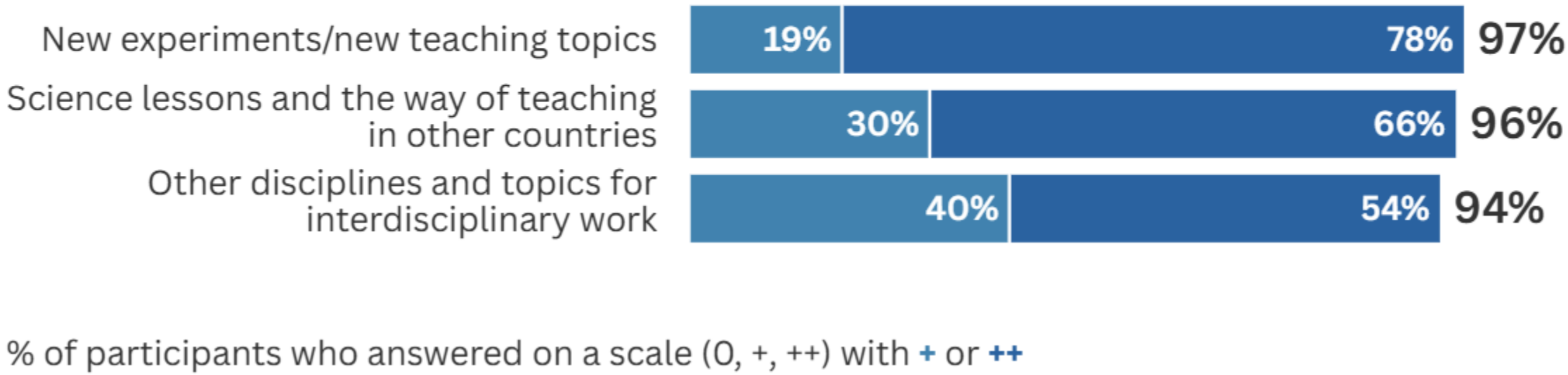
Through my participation I got new inputs on



% of participants who answered on a scale (0, +, ++) with + or ++

Evaluation

Through my participation I increased my knowledge about



% of participants who answered on a scale (0, +, ++) with + or ++

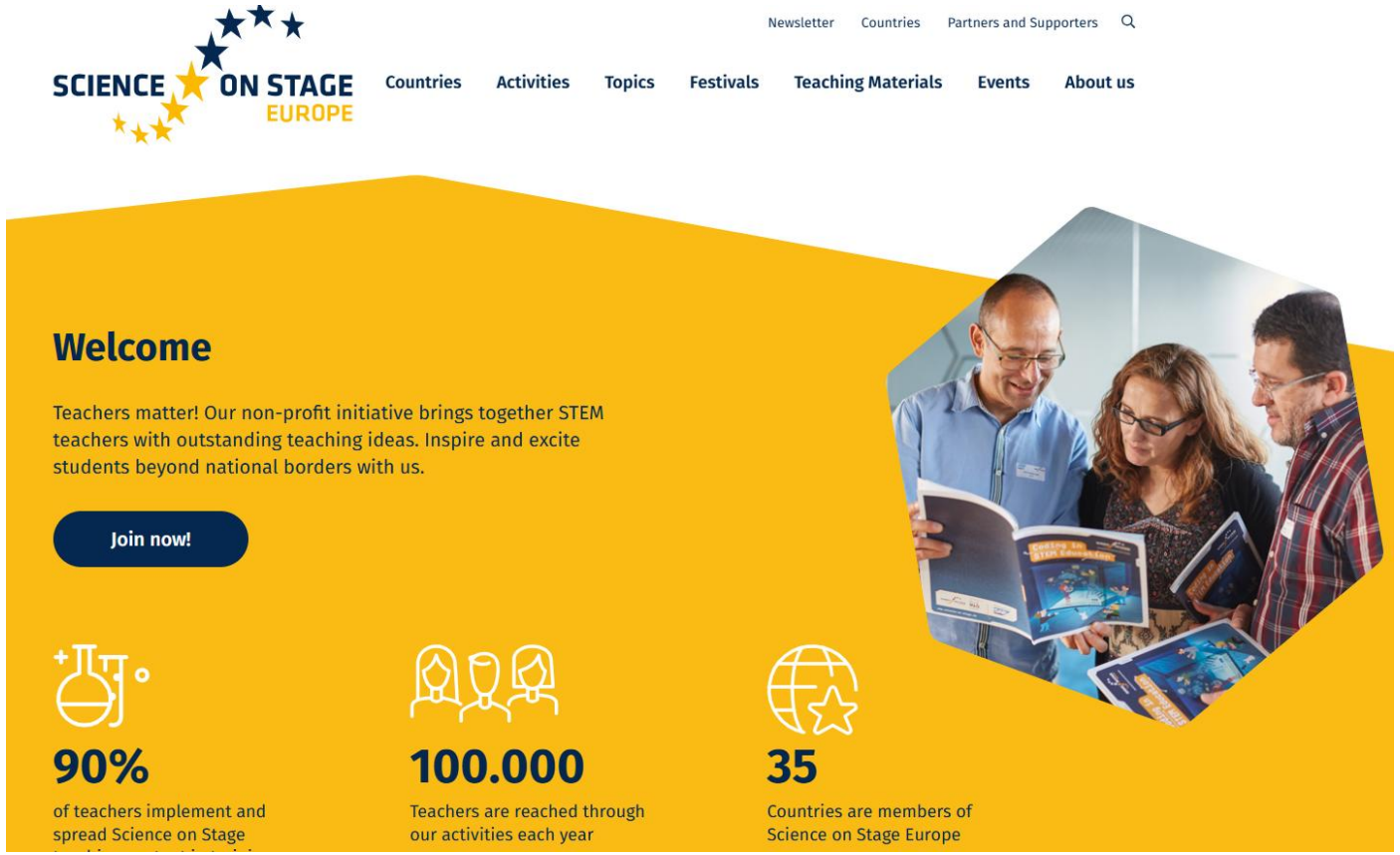
Impact of Science on Stage

- Supports teachers with practical classroom-tested ideas
- Provides resources in multiple languages
- Encourages feedback culture
- Increases job satisfaction and student engagement

Key Initiatives – How to join

- Science on Stage Festivals (biennial international events)
- Online webinars and peer-led training sessions
- Teaching material development (free, open-source)

→ Check the website www.science-on-stage.eu



Future Directions

- Strengthening international teacher collaboration
- Increase number of participants
- Promoting sustainable STEM education practices
  → Scaling up good practices
- Continuous assessment and feedback from educators
- Secure funding

Resources

- European Teacher Survey 2024, https://www.sanomalearning.com/globalassets/learning/what-we-do/european-teacher-survey/2024-european-teacher-survey-by-sanoma-learning.pdf
- European Commission: European Education and Culture Executive Agency, Birch, P., Motiejūnaitė-Schulmeister, A., De Coster, I., Davydovskaia, O. et al., *Teachers in Europe – Careers, development and well-being*, Birch, P.(editor), Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2797/997402
- Teaching and Teacher Education, Volume 26, Issue 4, May 2010, Pages 1031-1040, Effective teacher professionalization in networks?, Roelande H. Hofman, Bernadette J. Dijkstra, University of Groningen, GION/Institute for Educational Research, Grt. Rozenstr. 3, 9712 TG Groningen, The Netherlands
- Computers & Education, Volume 102, November 2016, Pages 15-34, Together we are better": Professional learning networks for teachers, University of Massachusetts Amherst, Teacher Education & Curriculum Studies
- Cukurova, M., Kralj, L., Hertz, B. & Saltidou, E. (2024). Professional Development for Teachers in the Age of AI. European Schoolnet. Brussels, Belgium.
- STEM Education Strategic Plan, announced in President von der Leyen's political guidelines for the European Commission 2024-2029

Thank you for your attention – join in!

Newsletter

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