SOP

Scientific Outreach Project

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biomagnetic sensing SFB 1261

Motivation and Objectives

Facilitating dialogue and understanding between experts and public

Three groups of addressees

1) Public

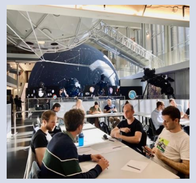
- Public events with live demos
- Digital communication formats

2) Schools

- Learning modules
- Project days
- Teacher education

3) IRTG

- Evaluations
- Workshops
- Participation in outreach



Focus on interactive experiences for everyone

- Hands-on exhibits and visualizations at events
- Interviews and podcasts *behind-the-science*
- Integration of IRTG researchers into outreach activities

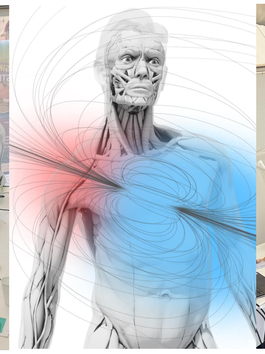
Results of the Second Funding Period

Making CRC research visible (and audible!)

- Appearance on major outreach events, including the *Kieler Woche* and *Highlights der Physik* with up to 40.000 visitors
- Booths at 4 science festivals around S-H
- 14 outreach workshops for students and teachers
- CRC podcast with 18 episodes ~ 40 min each
- Design of 2 interactive visualization modules

Podcast

Science visualizations



Supporting impactful science communication

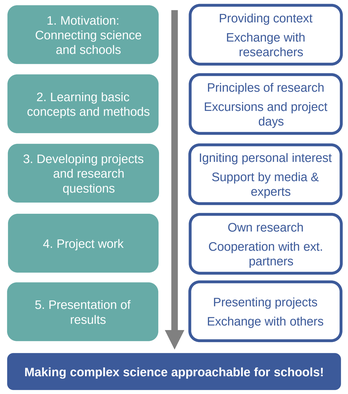
Three science communication trainings for the IRTG:

- Internal science communication (2021)
- Visual science communication to laypeople (2022)
- Summer School in the *Deutsches Museum* (2023)

Fostering interests and career orientation: The *Profilseminar*

New project-based course for 11th-grade about “Health and Sensing”

- 25 students in first and 22 in second term (01/2022 and 01/2023)
- Changes for 2nd term after feedback:
  - Extended project days in the *Kiel Science Factory*
  - Inclusion of programming courses
  - Direct integration of CRC scientists
  - Different presentation formats



Work Plan for Third Funding Period

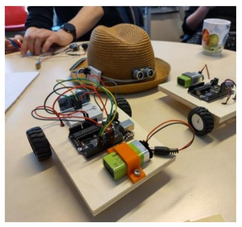
WP1 – Content reconstruction for education

- Expand collaboration with B10 and B9
- Integrate B11 topics to develop modules on robotics
- Embed CRC outreach into STEM academy S-H

Netzwerk Schülerforschungszentren Schleswig-Holstein

WP2 – Measures for career orientation

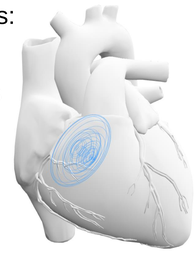
- Develop tools to analyse career orientation and identity development
- Continue and develop the *Profilseminar:*
  - Introduce modules on project management and prototyping
  - Provide ten sensor hardware kits for schools to borrow
  - Lower student/scientist communication barriers through lab visits



WP3 – Visualizations to engage audiences and researchers

Develop a visual communication toolkit in three phases:

- Identify key findings and concepts to visualize
- Collaborate with design experts to translate findings into an appealing medium
- Integrate the visualizations into outreach events



WP4 – Public outreach events

- Continue presence on major outreach events
- Increase visibility of projects with high interactive potential, i.e. B9
- Integrate school project results into events
- Foster acknowledgement for their creators

kieler uni LIVE

WP5 – Communication and dissemination

- Provide updates for CRC website
- Collaborate with the university press office to enhance visibility on social media channels
- Invite early-career researchers to include their own ideas
- Provide accessible teaching modules on CRC topics

Teaching modules

		2024		2025				2026				2027				2028	
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
WP 1	Content reconstruction	■	■	■				■				■				■	
WP 2	Visualizations	■	■	■	■	■		■	■	■		■	■	■		■	■
WP 3	Career orientation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
WP 4	Outreach activities	■			■	■			■	■			■	■			■
WP 5	Communication	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Collaborations

IRTG: Design of interactive visualizations, training, outreach participation

A: Incorporation of materials science aspects into outreach activities

B9: Build on improved project visibility achieved at outreach events

B10: Enhance and improve integration of topics into school outreach

B11: Develop educative modules on robotics and sensing

Z2: Collaboration in the functional characterization

Funds Requested

1 Doctoral researcher (75%), global funds: 150.0 k€

[SOP-1] Landis, S.; Piecyk, A.; Reitz, M.; Enzingmüller, C.; Schulenburg, H.; Bosch, T.; Dierking, K.; Deines, P.; Hunfeld-Häutle, J.; Rappaport, K.; & Duscher, T.: Bioessays, (2023).
[SOP-2] Çolakoğlu, J.; Steegh, A.; Parchmann, I.: Frontiers in Education. (2023).
[SOP-3] Broß, C.; Plöger, T.; Enzingmüller, C.; Parchmann, I.: CHEMKON, 29(8), (2022), 240-246.
[SOP-4] Krüger, J.T.; Höffler, T.N.; Parchmann, I.: International Journal of Science Education, Part B: Communication and Public Engagement, 12(2), (2022), 111-125.
[SOP-5] Broß, C.; Enzingmüller, C.; Parchmann, I.; & Schmidt, G.: Sensors, 21(21), (2021). - **B2, B10**
[SOP-6] Enzingmüller, C.; Broß, C.; Laumann, D., Parchmann, I.; Schmidt, G.: MNU Journal, 74(2), (2021), 149-153. - **B2, B10**
[SOP-7] Stamer, I.; David, M.A.; Schwarzer, S.; Parchmann, I.: International Journal of Science Education. 2021;43(6):868-887.
[SOP-8] Laumann, D.; Hayes, P.; Enzingmüller, C.; Quandt, E.; Parchmann, I.: American Journal of Physics, 88(6), (2020), 448-455. **- A7**
[SOP-9] Schwarzer, S.; Wilke, T.; Irmer, E.; Parchmann I.: Naturwissenschaften im Unterricht - Chemie. 2022 Mai; 33(189):2-8.
[SOP-10] Kampschulte L.; Enzingmüller, C.; Wentorf, W.; Quandt, E.; Parchmann, I.: Naturwi. im Unt.-Chem., 29(164), (2018), 41-45.
[Be16] Betz, A., Flake, S., Mierwald, M., & Vanderbeke, M. (2016). In C.-K. Looi, J. Polman, U. Cress, & P. Reimann (Eds.), The International Conference of the Learning Sciences (ICLS) 2016. Vol. 2 (pp. 815–818). Singapore: International Society of the Learning Sciences.
[Di16] Dierks, P. O., Höffler, T. N., Blankenburg, J. S., Peters, H., & Parchmann, I.: International Journal of Science Education, 38(2), (2016), 238-258.
[St20] Stamer, I., Pönicke, H., Tirre, F., Laherto, A., Höffler, T., Schwarzer, S., & Parchmann, I.: Research in Science & Technological Education, 38(2), (2020), 168-184.