

PUNCH4NFDI — TA 7

Education, Training, Outreach, and Citizen Science

TA7 Meeting -Unplugged Week

31.01.2024



TA7 People

WP1 Training Experts GAU Goettingen



Arnulf Quadt



Baida Achkar

WP3 Outreach & Schools Uni Bonn



Sonja Felder



David Ohse



Frank Bertoldi

WP2 Educating Students TU Dortmund



Carsten Burgard



Kevin Kröninger

WP4 Citizen Science MPIfR/Uni Bonn, KIT



Michael Kramer



Pranav Limaye



Victoria Tokareva

Baida Achkar (U Göttingen) replaced Kevin Kröninger (TU Dortmund) as Task Area 7 co-lead with Frank Bertoldi

TA7 - WP2 : EDUCATING STUDENTS

TA7 - WP2 : EDUCATING STUDENTS - 2023

- ❖ **Survey** is still ongoing and responses are continuously analyzed.
 - Exchange with project “Datenkompetenz in NFDI” regarding the survey on teaching
 - Agreed with DALIA to host the material
 - Responses: 15 for part 1 (Material) 3 for part 2 (offering organizations)
- ❖ Starting work on common **White Book** (Research Data in Physics Studies) in collaboration with DPG, KFP and physics-related NFDI consortia
 - Phone structured interviews with departmental study coordinators of various universities: Freiburg, Duisburg-Essen,...
- ❖ **Networking:** Contribution to the NFDI [Community Workshop](#) zur Kartierung von Datenkompetenzen.
- ❖ **Networking:** agreed with [FAIRmat](#) to work on a common database of educational materials & share insights.
- ❖ **Event:** Lecture “FDM in the Physics Curriculum” at the DPG conference.
- ❖ **Talk:** PUNCH Lunch, “[Education of Students](#): a key challenge for sustainable change” by Carsten Burgard

Online Survey

Related PUNCH-Deliverables

- **D-TA7-WP2-1:** *Market survey* of available teaching concepts and material.
- **D-TA7-WP3-2:** *Access to data and software* for education and entertainment.
- **D-TA7-WP3-3:** *Tutorials and resources* for teachers and students, material for masterclasses.

Survey - Part I

Which materials related to data literacy are already available?

- Target group: organizers, lecturers, teachers, participants, consumers
- Data literacy: range of topics from data evaluation with Excel to machine learning, handling research data and licensing
- 13 features are recorded for classification

Survey - Part II

Which organizations and structures make recurring offers, provide materials or connect the various participants?

- Target group: representatives of relevant organizations
- Reference to data literacy should also be there

Long-term goal of the survey: Create a database with existing and freely available materials

Current status

- Have agreed with DALIA
 - interested in hosting the data
- Number of responses very limited so far
 - 15 for part 1 (right)
 - 3 for part 2



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Part 1

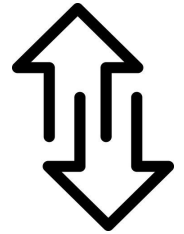


Part 2

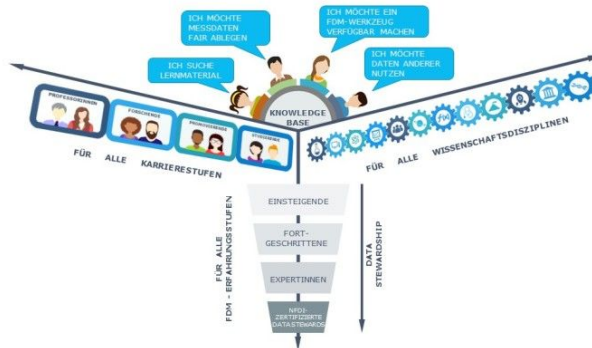
| | |
|---|---|
| Datenverarbeitung in der Physik | Python |
| Programmierkurs Lehrstuhl E5a, TU Dortmund | |
| Vorlesung "introduction to machine learning" | |
| Vorlesung "statistische Methoden der Datenanalyse" | Mathe Theorie und Übungen mit ROOT |
| Einführung in Prinzipien der Programmierung | |
| Tools for Scientific Computing | |
| Computational Science; Python-Projekt für Schüler; Selbstlernplattform für Linux, Python, C++ und Cluster-Computing | Python, Octave, C++ |
| Einführung in Computerorientierte Physik | |
| Einführung in die empirischen Methoden der Agrarwissenschaften | R |
| Datenworkshop | |
| Machine Learning in Fundamental Physics | |
| Analysetechniken in der Hadronenphysik | Python im Jupyter-Notebook |
| Vorkurs | |
| https://t1p.de/survey-part-I | https://t1p.de/survey-part-II |
| Einführung ins wissenschaftliche Programmieren | |
| Forschungsdatenmanagement für Doktorand*innen (fakultätsübergreifend) | |

Interaction with FAIRmat

- FAIRmat education discussion attended in autumn
 - successfully distributed our survey
- FAIRmat members were inspired to start a similar survey
 - very productive discussion to improve upon existing questions
 - open to merge results / surveys to increase exposure and yield
 - agreement to host resulting data on DALIA (or similar service) once available



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DARMSTADT



Ramping up of FAIR teaching activities in Dortmund

- Creation of a new university course (Summer)
 - basics of scientific data analysis
 - best practices for archiving data and code
 - preparation for the physics lab course
 - embedded in existing courses
 - will take weight off of existing lab preparation course & computer induction courses
 - improved preparation for advanced courses on statistical data analysis & machine learning
 - material will be fully available online for asynchronous use
- Re-invention of existing lab experiment (Spring)
 - students will exchange datasets for analysis
 - improve awareness of documentation needs & FAIR data practices



DPG/KFP Whitebook

Phone interviews

- Conducting phone interviews with departmental study coordinators of various universities
- each one takes ~45 minutes
- 35 questions per interview
- detailed transcript available for later analysis
- Progress is slow, but steady

Leitfragen für strukturierte Interviews im Rahmen der Expertenbefragung zu „Daten im Physikstudium“

(Version V4-Fragebogen, 2022-10-27)

| Ansprechpersonen für Daten-im-Studium-Umfrage | | | | | | |
|---|-------------------------------------|---------------------------|-----------|--|------------------|-----------------------------------|
| gelb: nicht vertreten beim KFP-Plenum Juni 22 | | grün = Interview erledigt | | | | |
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