Hackathons and other participatory open science formats

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Abstract

This paper aims to provide a structured overview of four open, participatory formats that are particularly applicable in inquiry-based teaching and learning contexts: hackathons, book sprints, barcamps, and learning circles. Using examples, mostly from the work and experience context of the Open Science Lab at TIB Hannover, we address concrete processes, working methods, possible outcomes and challenges.

The compilation offers an introduction to the topic and is intended to provide tools for testing in practice.

Keywords

Peer-to-Peer-Learning, P2P, Open Science, Open Education, Hackathon, Barcamp, Book Sprint, Learning Circle

Introduction

Open Science means a practice of science in which others can participate and contribute, where research data, laboratory reports, and other research processes are freely accessible under conditions that enable the reuse, redistribution, and replication of research and its underlying data and methods.

In summary, Open Science is about transparent and accessible knowledge that is shared and (further) developed through collaborative networks. In this context, Open Science bundles strategies and procedures that aim to make all components of the scientific process openly accessible and reusable via the Internet. This is intended to open up new opportunities for science, society and business in dealing with scientific findings.

These include product-oriented approaches that make (interim) results as openly accessible as possible, such as open access, open data, or the reproducibility of research.

The term Open Science is based on the following principles:

- Transparency
- Reproducibility
- Reusability and
- Open Communication

One of the central challenges of Open Science is to enable the long-term use of scientific findings in new and previously unknown contexts. For this to succeed, open interdisciplinary exchange as well as open, joint learning with and from each other are essential.

In this paper, we provide a structured overview of four open, participatory formats that are particularly applicable in investigative teaching and learning contexts: hackathons, book sprints, barcamps, and learning circles. Using examples, mostly from the work and experience context of the Open Science Lab*[1] at TIB – Leibniz Information Centre for Science and Technology and University Library, Hannover, we address concrete processes, working methods, possible outcomes and challenges.

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Article Text

Open Education

Open Science can be regarded as an initiator for research-based training and learning. More than ever, it is therefore to develop and implement offers for learrning for individual further education, and for testing new forms of collaboration for both internal and external target groups.

Open Education can be defined as a practice of enabling all people to participate in knowledge, learning and education. Open Education, including Open Educational Resources, Open Teaching, and joined-up participation, means that Open Science is a set of phenomena and practices related to the use of digital and networked technologies by scholars, based on certain basic assumptions regarding openness an democratization of knowledge creation and dissemination (Weller 2014).

Co-construction of knowledge

Education, understood as an active process of self-designed and self-responsible learning, requires methods and formats that enable synergy, explication of knowledge and model-based learning (see Fthenakis et al. 2007:10). These synergies are created through cognitive engagement with diverse perspectives, because observing peers as role models enables knowledge and behaviour to be reflected, expanded and internalized. The more active and self-motivated, the more problem-solving and dialogical, but also the more consciously and reflexively knowledge is acquired or (co-)constructed, the better it is

understood and retained. In addition, it can be used more flexibly in thinking and acting, which leads to a more meaningful experience of the learning outcomes associated with its acquisition (Reusser 2006:159).

Co-construction means that learning takes place through collaboration. Learning processes are constructed jointly by peers. Co-construction involves a range of interaction processes, including collaboration, cooperation, and coordination, while at the same time not necessarily being connective or supportive interaction. The focus is more on the exploration of meaning than the acquisition of knowledge. By observing how peers behave, knowledge and behaviours are internalized, because the constructed world and self-image (see Reich 2008) can be very well reflected and expanded by the individual in exchange with peers, so that the interaction of the learner with his social environment leads to a "learning-enhancing effect". Or as Philipp Schmidt, Director of Learning Innovation at the MIT Media Lab, puts it in an interview: "I think we're going to see that the most interesting things coming more and more from people who are either very much in two disciplines or in between disciplines" (see Dürkop and Ladwig 2016:53).

Peer-to-Peer-Learning (P2P)

P2P describes systems in which everyone can contribute to the creation and maintenance of a shared resource and benefit from it at the same time. For example, in the free encyclopedia Wikipedia (see Bauwens et al. 2019) P2P is a type of social relationship in human networks where participants have the greatest possible freedom to learn and connect in a self-directed way. At the same time, learning is an activity of relations. It is about negotiating solutions together.

Open Science and Open Education demand precisely this kind of very behaviour, but also enable it. The relationship layer and how it is shaped forms the basis for learning in P2P learning formats. This is not just about results, technical know-how and presentation, but fundamentally also about a change in professional attitudes and cultures (Muuß-Merholz 2019). The relationships between the participants hold a learning group together, not the materials or the open infrastructure.

P2P learning formats are open, collaborative and participatory. They are therefore particularly suitable in the context of Open Education, because they enable participants to engage in exchange with others, to network and to compare perspectives. Moreover, they enable a shift away from strong orientation towards content into shared, collective and collaborative process-oriented engagement.

Supportive environments and cultures are needed for a participatory learning culture:

- Emancipation and autonomy as guiding principles (self-learning, empowerment).
- Solving problems together with others.
- Taking responsibility and handing over responsibility for one's own learning process
- Learner orientation.

- Development of society through participation and sharing knowledge.

Participation includes:

- Self-determination: The learning process is not initiated with but by learners and, if necessary, supported by teachers in partnership (e.g. content, goals, methods).
- Co-determination: Participation rights that actually involve learners in decisions and give them co-responsibility for learning success.
- Participation: Influence and concrete involvement in the implementation and introduction of learners' own ideas (Mayrberger 2012:18).

Participatory collaborative teaching-learning formats open up the possibility of

- co-constructing knowledge;
- comparison with alternative perspectives;
- explanation or presentation of projects, concepts and ideas.

Open formats open up participation beyond the academic-university context. Open formats offer the possibility not only to act within one's own discipline but also to negotiate a topic with a broader public. In this way, novel or even better ideas are taken up and given the opportunity to explain them to a broader target group.

P2P learning formats enable:

- The joining of learners to learn with and from others.
- An abolition of the rigid separation into teachers on the one hand and learners on the other.
- High flexibility for content, method and approach.
- Greater emphasis on exchange and negotiation; different approaches and perspectives are welcome.
- Increased attention to the processuality of learning.

Furthermore, they enable and require a high level of communication, which makes it possible but also necessary for participants to actively engage in the learning and experience process (see Muuß-Merholz 2019).

Many fields in science are evolving at a rapid pace and in sometimes unpredictable directions. For these fields, traditional, often static event formats for learning and training often no longer works, where needs and responses must first be clearly defined and then organized by institutions and educators in often time-consuming and prepared formats (such as conferences and congresses).

Today's practice needs suiitable formats in which researchers and people interested in research in different contexts learn with and from each other This is not always about ready-made knowledge, but also about finding out more about one's own work together and getting to know other new perspectives on it (Muuß-Merholz 2019). P2P formats enable such an exchange to take place.

Planning, designing and evaluating teaching and learning processes together, as is usually the case with P2P learning formats, means taking joint responsibility for the success of learning processes (see Mayrberger 2018). Actual participation takes place where the respective actors are actually given responsibility, where they are given the opportunity to participate, to have a say and to decide for themselves by being given the framework by the organization to organize themselves, i.e. to act together beyond participation (see Marberger 2021).

However, as Mayrberger and Linke 2014 explain, participatory teaching and learning can only succeed if actors are provided with sufficient experimental spaces so that they can both experience and authentically engage in self-determined learning at eye level in the sense of empowerment, and also be critical about it. Participatory spaces are characterized by self-organized learning outside traditional educational venues, process-oriented, non-hierarchical and collaborative working methods (see Reitsamer and Zobl 2010). Those are spaces where people are brought together around common interests and goals and participate through informal learning and networking activities. According to Gee 2004, certain barriers (such as age, socio-economic status, education) can be overcome through shared motivation.

At the same time, breaking up expert knowledge can lead to democratization of different forms of knowledge. Thus, these spaces can act as a motor for innovation, creativity, cultural transformation and social development.

P2P learning and Open Science

In order to create such spaces, conducive conditions or an enabling culture as well as suitable exchange and work formats must be cerated. In other words, if we want scientists to live an Open Science pracitice, opportunities must exist that enable and promote the social practice of sharing, collaboration and communication.

The collective willingness to change, in the case the application of Open Science principles, is based on a social acceptance and legitmacy of change, which, however, is difficult to establish directly (see Graf-Schlattmann and Oevel 2022). Participation in teaching-learning formats aims in particular at changing social practices. A teaching-learning culture that is conducive to change and creates freedom can help to reduce resistance. This is because participants are given the opportunity to shape their own learning and to experience their professionalism and individual expertise being accepted and valued.

The exchange between scientists and people interested in the topics can also be understood as an aspect of science communication. In open teaching and learning formats, values and methods of Open Science are exercised and practiced. In the case of hackathons, booksprints and barcamps, the results are usually published and shared openly, so that interested parties who did not paticipate in the event can also take part.

Participatory P2P formats *[2]

Hackathon

Goal: To develop an innovative new solution to a specific problem or issue

Working method: project-oriented

Importance of hackathons in the context of Open Science

Hackathons bring together interdisciplinary talents from different fields, programmers, scientists and interested people with different experiences and from diverse disciplines and backgrounds, to develop innovative and sometimes unusual solutions to real and relevant problems. The discussion does not take place on a theoretical, intellectual level, but on a very practical one. In the time available, concrete prototypes are created in response to the themes and questions posed by the hackathon. The teams are asked to present concrete results within a set time.

Examples of hackathons in the context of Open Science

- Open Access Week 2022: Working together to liberate the world climate report*[3]
- Open Data Hackathon - Open University*[4]
- Reproducibility Hackathon @Open Science Festival Hannover*[5]
- 3D Hackathon - Creating New Dimensions*[6]

Since the first known hackathon*[7], the general purpose of the hackathon has undergone a transformation. While hackathons were initially about solving technological problems, today the hackathon method is considered a more purpose-oriented approach; a teaching method, an educational tool, a knowledge transfer (see Rys 2021). Learning is one of the main motivations for participating in hackathons, where situated, collaborative and co-creative learning takes place. Knowledge acquisition results from the practice itself and from participants learning from each other (Gama et al. 2018).

A hackathon, which usually takes place as a face-to-face event, is about solving challenges practically in a creative, experimental and unusual way. A hackathon is a project-oriented event for programming, as a competition for pitching or presenting prototypes of a digital innovation, such as the prototype of an app (see Briscoe and Mulligan 2014). For this, practitioners, designers and other creative experts with different professional competencies come together. The goal is to have developed an innovative new solution to a specific problem or question in an intensive, collaborative and co-constructive manner at the end of a predefined period of time.

Due to their casual and informal character, hackathons are suitable as a method of informal learning (Nandi and Mandernach 2016), in which the knowledge acquisition results from the practice itself and the joint learning of the participants from each other. During the hackathon, participants go through the entire design process, from the idea to the presentation of the result. The learning process, which depends on the pace, needs,

and competencies of all members of a team together, thus introduces participants to new, previously unknown areas.

The learning process comprises several systematic steps, starting with problem/ requirement analysis, idea generation, idea evaluation, project planning, product development and finally testing. This approach to the learning process leads to a variety of differences in problem solving at each stage.

In the first phase of idea generation, information is linked to new approaches. In the second phase, more focused problem solving requires extensive sharing within the project team. The third phase of implementation requires effective coordination and problem solving among all participants in the team.

Even if topics, contents and also the time frame differ in hackathons, the process in this format is basically the same for all of them.

Example: Culture hackathon Coding da Vinci

Normally, hackathons in the style of a "marathon"*[8] usually only lasts a day or a weekend. In the case of the Coding da Vinci cultural hackathon*[9], in which participants create new projects, prototypes and applications from open data provided by cultural institutions, the sprint phase between the kick-off event and the award ceremony spans a period of six to ten weeks. This period offers participants and the data-providing institutions more time and space for communication and for complex project design*[10].

The kick-off event offers an introduction to the hackathon process. The cultural institutions present their data and the participants get the opportunity to develop project ideas and form teams together with the institutions.

In the sprint phase following the kick-off event, the teams work on ideas, projects and prototypes with the aim of presenting them at the awards ceremony at the end of the hackathon. For this, it is necessary that the team is self-organized and has a dynamic structure. The result is largely autonomous teams, each of which implements its own complex project idea flexibly, creatively and productively. Individual skills of the team members complement each other. They are supported by the team of facilitators through the organization of joint meetings, which enable them to exchange ideas with other teams and where they can obtain advice and support from experts.

The sprint phase ends with the presentation of the team results, which usually takes place as a final event with all participating project teams and a wider audience.

Book Sprint

Goal: Production of a book manuscript that can, for example, undergo peer review or professional editing

Working method: Structured, result-oriented and collaborative writing

Booksprints in the context of Open Science

Booksprints, as modern publication offerings, could support the shift towards open science. By participating in booksprints, both collaborative writing and open peer review can be actively tested. In implementation, a focus can also be on learning how to use free software tools that generate formats that enable single-source publishing and sustainable availability. Common rules and frameworks are negotiable prior to the writing process. This is done depending on the nature of the work. The people involved consciously reflect on and help shape the publication process.

Examples of booksprints in the context of Open Science

- L3T - Textbook for learning and teaching with technologies*[11]
- Project "CoScience - Researching and publishing together with the web"*[12]
- Book Sprint Series: Handbook IT in Libraries*[13]
- New Work: Moving into the Future! Shaping the Future of Work Across Generations and with Equal Opportunity*[14]

Booksprints are a method for writing a textbook, manual, or documentation on a given topic with a selectively invited, closed group of typically up to twelve experts in a results-oriented manner.

The sprint typically occurs as a physical meeting lasting three to five days, during which, moderated by a book sprint facilitator, the potential content of the document to be written is initially drafted and then written step by step. Writing usually takes place alone or in small subgroups within limited blocks of time. The authors take collective responsibility for the whole book, correcting or supplementing each other in the successive writing phases. In meetings between these writing phases, joint decisions can and must be made about the overall product, e.g., adding a subchapter that has become necessary, or expanding the editorial format for all chapters (see Heller and Brinken 2018).

The goal of the sprint is to reach a level of maturity that allows the finished product to be peer reviewed or edited. Depending on what is set as an ambitious but feasible goal in the planning phase, however, the desired result can also be a book chapter, for example. For this purpose, tasks must be assigned (ideally already at the beginning of the sprint event) for the sprint's subsequent work.

Initiators of book sprints are often people who are responsible for learning and knowledge resources in an organization (often in companies, cultural or scientific institutions, and NGOs). Book sprints often come up as a topic when the issue of bundling, structuring and passing on knowledge is rethought, knowledge that already exists in the minds of the organization and is constantly being shared "on a small scale", but which is at the same time so special and dynamic that it is not adequately covered by traditional publishing products in the form of textbooks, manuals or reference books.

Book sprint facilitators typically have two main tasks. First, they advise the initiators of the sprint at the beginning of the project in order to find suitable solutions for the typical project steps. Second, the facilitator (often working as a team of two) runs the sprint event themselves, e.g., by clearing away ambiguities and obstacles of various kinds to allow the authors focus on writing the actual content of the book.

Essential for a successful book sprint is always that the initiator sets a goal, and (either personally or in a team with others) takes care of the recruitment of the authors, venues for the sprint event, the subsequent distribution of the finished book and, if necessary, other framework conditions for the development of the book. The approach - typically advised from the outset by experienced book sprint facilitators - may indeed vary depending on the project. Two successfully completed projects from the many years of experience with the planning and supervision of book sprints at the TIB are worth mentioning here:

1. In the case of the FOSTER Open Science Training Handbook, there was a call for authors, in which the participants of the book sprint had to be selected from 39 applications received (see Brinken et al. 2018). Many subsequent steps, including the translation of the resulting book into several languages, were created with mediation by the project maintainer directly on and with the platform Github, where the structured content of the book is made freely and permanently available.

2. In the case of the textbook series, which was written by the Academy of Public Health with the support of TIB as part of a series of book sprints sponsored by the Federal Ministry of Health, experienced lecturers from the academy were specifically invited and in return received an expense allowance*[15].

A common feature of the two projects mentioned above is that the books created are made permanently and completely available under a free license (in both cases Creative Commons - Attribution, CC-BY) and that free software, among other things, was used in their creation, from the collaborative writing of the manuscript in the browser to the automatic conversion of the structured book content into various output formats. The book sprint method and the software used have been under further development at TIB since 2021 as NextGen Books*[16] within the framework of NFDI4Culture* [17]. However, other providers also support book sprints worldwide, both in an advisory capacity during implementation and through their own technical infrastructures*[18].

What are the special features of book sprints compared to other methods for developing teaching and learning materials such as manuals, textbooks and reference books? - The specific quality of the book sprint method really pays off when a teaching and learning material is to be created through inviting contributors who can and want to be given as much joint responsibility as possible for the quality of the content of the final product in a structured, results-oriented process. This presupposes not least a clarity among the initiators about "their" knowledge carriers and the relationship to them. Unlike many books, which go through the typical production and distribution cycle of traditional publishing products, the products of such sprints are part of an autonomous knowledge and community process of their own. In view of digital and agile tools, it becomes clear how

outdated the traditional production cycle of some textbooks and manuals is, but in the end, they are just that, mere tools, also in the book sprint.

Barcamp

Goal: Sharing knowledge, developing new ideas, active networking

Working method: Interaction, exchange

Barcamps in the context of Open Science

The barcamp format can be used especially in the development and initial phase of a transdisciplinary research project to initiate collaborations, to get to know future partners for the project as well as their interests and experiences, and to generate impulses for the goals and questions of the project.

Examples for Barcamps in the context of Open Science

- Barcamp "Open Science 2022”*[19]
- Barcamp "Open Data - Researching with available data"*[20]
- Barcamp "Research Now”*[21]
- Digital Barcamp "Social Media in Science”*[22]

Another format of P2P learning is barcamps, which are often also referred to as "unconferences". The barcamp concept puts all participants on an equal footing. Together with the active involvement of all participants, this creates an intensive exchange of knowledge, new ideas are generated, joint projects are initiated, and active networking is made possible.

The open format enables the participation of a wide variety of individuals from different disciplines and career levels, which can open up completely different perspectives on the chosen topic. The focus is on the interaction of the participants, the "sharing" of knowledge.

The basic idea of a bar camp is simple: People with similar interests come together. They are given the space and time to talk about topics that are really relevant to them at the moment. This creates a lively and efficient exchange, which offers many new impulses and solutions for all participants.

All topics at a barcamp come from the participants and are planned spontaneously on site. There are no predefined topics like at conferences. Instead, everyone can contribute with the topics that move them at the moment. Besides presentations, also discussions, concrete questions and workshops are welcome. Even tools or ideas that are published immediately before the start of the event can be discussed. Participants can learn about new trends and future developments. In this way, many new impulses arise that everyone can implement and follow up for themselves.

At barcamps, the focus is on knowledge and not on its presentation. By bringing together different solutions and impulses from the different perspectives of the participants, new solutions and ideas often emerge that cannot be opened up on their own or only with the perspective of a single organization or field of expertise. Accordingly, joint projects or cooperations often emerge from barcamp sessions.

The process of a barcamp

Barcamps are often two-day events, preferably held on weekends or Fridays and Saturdays. However, barcamps that are only held on one day, sometimes for only a few hours, are also possible. While a time or schedule with an exact list of speakers must be firmly organized for classic conferences, only a rough framework is provided for a barcamp.

The planning of a barcamp includes the provision of facilities, working materials and (presentation) technology and, if it is not a purely digital event*[23], catering. The program with opening time, session planning, session slots and the closing of the event should also be defined. In times of pandemic, barcamps have proven to work well even as a purely digital format.

One person acts as facilitator for the day and coordinates the planning of tasks and sessions. The participants are welcomed at the beginning of the barcamp and the general barcamp rules are explained, e.g. that barcamps are usually held on a first-name basis, what a session at a barcamp means and how session planning works. Afterwards, the participants are encouraged to pitch their session ideas. The format of a session can be freely chosen by those offering it. It can be a workshop, an open discussion, a lecture or even a question. Because this may determine the size of the room that will be allocated for the individual session, the participants will be asked for each session proposal how many people would be interested in participating.

All accepted session proposals are recorded in a session plan with further details such as the name of the person(s) offering the session, room and time, which makes the session program available to all participants at all times. Participants are free to decide which sessions they would like to attend. This makes it possible for new group constellations to emerge in each session.

The barcamp ends with a final round in which the participants can give their feedback on the organization and the topics of the event.

Barcamps can be organized openly and across disciplines and made accessible to all interested parties. However, barcamps can also be held within a department, institution or organization in order to improve internal communication processes, link knowledge across departmental boundaries or drive holistic innovation processes, for example. This may also involve external participants.

Learning Circle

Goal: Ensuring and extending learning processes, empowerment of learners

Working method: Self-directed and agile learning in small groups

Learning Circles in the context of Open Science

Learning Circles are guided learning groups for people who want to secure and extend their learning process. The goal is facilitated, self-directed, and agile learning in small groups, on a pre-determined topic. The idea is simple: People who want to learn something and have a common topic come together and approach their individual learning goals.

Learning Circles can be composed of members from very different disciplines and backgrounds. The diversity of the group can be enriching and foster collaboration between disciplines.

Examples of Learning Circles in the context of Open Science

- Co-Thought: Robots in my life - And now? Documentation of a Learning Circle on Robotics and AI*[24]
- CIRCLET Guide for Facilitators: Learning Circles for Community Engaged Research and Learning. Learning circles of Educators and Technology) project (2019-2022)*[25]

Learning Circles are a concept in the field of Open Education developed by Peer 2 Peer University*[26] (P2PU) and partners, which has been internationally tested and scientifically evaluated. The basic idea: Public learning spaces (e.g. libraries) offer guided learning groups for people who want to participate in online courses and want to secure and expand their learning process.

Learning Circles are designed to support learners in learning together and from each other on a clearly defined and bounded topic. Social aspects of collaboration and constructive feedback are key components. People often meet anyway to learn together. Learning Circles can help close learning gaps or backlogs by organizing and facilitating the group.

The goal is moderated, self-directed and agile learning in small groups. In this sense, the learning circles project explicitly sees itself as a contribution to the empowerment of learners.

According to the idea behind Learning Circles, people who want to learn something and can agree on a topic come together and approach their individual learning goals with free and Open Educational Materials (OER). Along the way, they are motivated and accompanied by a designated person, called a "facilitator" in the Learning Circles concept.

Learning Circles can increase participants' capacity to act as self-directed learners. In her research, (Damasceno 2017) demonstrates that participation in Learning Circles increased learners' chances of joining other communities, such as a higher education institution or other study groups. Thus, Learning Circles also have the potential to build bridges between

different educational institutions. Not only the success of a specific activity is improved, i.e., the completion of an online course, but also the skills and dispositions for future learning.

Learning Circles essentially consist of four components, whereby it can be decided individually according to need or with orientation to different target groups whether or not to follow the proposed schedule. The four proven components are:

- Check-In: The meeting begins with a review of the past week and an explanation of the goals for the day.
- Activity: Can be done before or after the coursework. Activities should be designed to build a sense of community, help develop learners' confidence, and assist in connecting the course content to real life.
- Coursework: The largest portion of each learning circle is devoted to working through the online course.
- Feedback: At the end, participants each describe an example of what went well in the meeting and something that they would like to improve in the next week*[27].

However, the schedule can also be adapted to suit the particular need or different target groups. For example, in the case of the Learning Circle on the topic of "Mitgedacht: Roboter in meinem Leben – und jetzt?"*[28], which took place over a period of six weeks in spring 2021 in cooperation with the Central Library of the Hamburg Book Halls - online due to the pandemic - the proposed schedule was changed in consultation with the participants. Learning did not take place in an online course during this Learning Circle. Instead, the participants suggested materials (texts, videos or podcasts on the topic) with which the group worked through the content of the topic in the course part of the meetings.

Sequence of events based on the example of the learning circle "Mitgedacht: Roboter in meinem Leben – und jetzt?"

The above-mentioned well-documented Learning Circle "Mitgedacht: Roboter in meinem Leben - und jetzt?"*[29], which took place in spring 2021, allows insights into the format, the selection of topics, the process, the exchange among each other and the experiences gained.

In this Learning Circle, seven participants met online once a week for two hours to learn with and from each other via freely accessible and freely available material on the topic of robotics and AI.

At the beginning of the Learning Circles, three topics in robotics and AI were available for selection: robots in the home, robots and workplaces, and robots in transportation. In the first session, the group decided on robots in the home.

Starting with the second session, all participants of the Learning Circle defined questions and individual learning objectives. Guided by the formulated learning objectives, various aspects related to the technologies robotics and AI were discussed, suggestions for

relevant sources for the topic were exchanged and it was determined which materials would be worked through by the participants until the next meeting.

With the exception of the first meeting, the meetings proceeded, with slight variations, according to the four components of Learning Circles:

- Check-In: What was going on in the past week?
- Individually, what was the most interesting discovery about the topic?
- Joint work on the questions
- Plus/Delta: What went well, what do I need to improve?

The group remained united until the end of the Learning Circle and the feedback at the end of the learning period was consistently positive: All participants regretted the end of the program and emphasized that they would participate in a Learning Circle again*[30].

Summary

In the context of Open Science, participatory P2P formats such as hackathons, book sprints, barcamps, and learning circles offer the opportunity to engage in open cross-disciplinary exchange with participants from different disciplines or with participation from other parts of society, as well as to learn together and from each other.

Depending on the goal to be achieved with a P2P learning format, different solutions are available. The solutions introduced here have all been tried and tested and are suitable for supporting research-based teaching and learning in an Open Science setting.

More than ever, therefore, there is a need to develop and implement options for learning, for individual continuing education, and for testing new forms of collaboration for external and external target groups. In this context, Open Science should also be understood as an impulse generator for research-based teaching and learning.

After all, the following also applies here: To try is to learn!

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Conflicts of interest

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Endnotes

*1 https://www.tib.eu/en/research-development/research-groups-and-labs/open-science

*2 Recording of the presentation "Learning Circles, Barcamps, Hackathons" given in German at the online conference #vBIB21, available at: https://av.tib.eu/media/55595

*3 https://www.tub.tuhh.de/blog/2022/10/24/oaweek2022-gemeinsam-den-weltklimabericht-befreien/

*4 https://www.uni-potsdam.de/de/innovative-hochschule/oneup/aktuelles/hackathon-open-data-open-university-2

*5 https://www.reprohack.org/event/22/

*6 https://creating-new-dimensions.org

*7

OpenBSD 's apparent first use of the term referred to a cryptographic development event held in Calgary on June 4, 1999. Wikipedia: https://en.wikipedia.org/wiki/Hackathon

*8 Hackathon is a neologism made up of "hacking" and "marathon", see: https://en.wikipedia.org/wiki/Hackathon

*9 https://codingdavinci.de/en

*10 For information on the procedure of a Coding da Vinci hackathon, see "Coding da Vinci Lower Saxony 2020 : Project Report": https://doi.org/10.15488/10977 , p. 6 - 10

*11 https://oa-pub.hos.tuhh.de/de/2020/12/11/11.-booksprints-unterst%C3%BCtzen-wissenschaftlichen-kulturwandel/

*12 https://www.b-i-t-online.de/heft/2015-02-fachbeitrag-mehlberg.pdf

*13 https://www.th-wildau.de/hochschule/zentrale-einrichtungen/hochschulbibliothek/ueber-die-bibliothek/projekte/book-sprint/

*14 https://repos.hcu-hamburg.de/handle/hcu/759

*15 From the point of view of both the Academy and the TIB, the project is described in the following (German-language) podcast: https://open-educational-resources.de/oer069/

*16 https://projects.tib.eu/nextgen-books/en/

*17 https://www.tib.eu/en/research-development/project-overview/project-summary/nfdi4culture

*18 See the commercial provider Book Sprints Ltd., https://www.booksprints.net /

*19 https://www.open-science-conference.eu/barcamp/

*20 https://barcamps.eu/barcamp-open-data/

*21 https://www.dhbw.de/die-dhbw/forschung-innovation-und-transfer/forschung-innovation-und-transfer/dhbw-barcamp-research-now

*22 https://www.plant2030-academy.de/events/workshops/barcamp-social-media-science

*23 Especially in times of pandemic, it has been shown that barcamps are also suitable as a purely digital format.

*24 https://tore.tuhh.de/bitstream/11420/9852/1/2021-08-02-OER-Learning-Circle_1.0.pdf

*25 https://circlet.eu/wp-content/uploads/sites/15/2022/09/FINAL_IO3_LC_for-CERL_2022.pdf

*26 https://www.p2pu.org/en/

*27 https://storage.sbg.cloud.ovh.net/v1/AUTH_e8fb231d58fc40ed9af2a222b6ee4c49/KONTENA-PRODUCTION-HOOU/4c2509b5-08d6-4d7e-aef0-93f8ed1089b1/pdf.pdf

*28 Engl. “Co-thought: Robots in my life - and now?”, see https://tore.tuhh.de/bitstream/11420/9852/1/2021-08-02-OER-Learning-Circle_1.0.pd f

*29 ibid. https://tore.tuhh.de/bitstream/11420/9852/1/2021-08-02-OER-Learning-Circle_1.0.pd f

*30 In detail: Podcast (in German) „Lernort Bibliothek – Ein Learning Circle zum Thema „KI und Robotik“, available at: https://www.fraufahrenkrog.de/podcast/bibfunk14-duerkop-politt/