

Case Report

Getting Scientists Ready for Open Access: The Approaches of Forschungszentrum Jülich

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Abstract: Many scientific institutions are faced with the question of how they should inform their scientists and scientific coordinators about the option of publishing open access. This task is one that libraries have taken upon themselves: libraries are familiar with the market participants and have years of experience in teaching information and publication literacy. This case report looks at two approaches taken by the Central Library of Forschungszentrum Jülich in 2017. It highlights the motivation, strategy, resources and implementation, as well as the first evaluation of both approaches. The first approach was a redesign of the training courses offered by the Central Library with a focus on the target groups and new contents. The second approach was implemented as part of International Open Access Week and involved offering an information event tailored to each scientific institute. The event was customized to meet the needs of the target group defined by each institute, the institute itself, and was organized individually. As a result of these efforts, the open access rate increased over the last few months and at 48% open access in 2017, Forschungszentrum Jülich is well on its way to achieving the open access goals set by the Helmholtz Association.

Keywords: open access; information services; training; publishing literacy; marketing

1. Introduction

Open access represents the transition from the classic model of a paying readership to free knowledge for all. On the one hand, scientific libraries are actively driving this change; on the other hand, they are subject to it themselves, have to react to the changed requirements and must adapt themselves and their structures. No individual department in the Central Library of Forschungszentrum Jülich is responsible for open access. Instead, the topic is relevant in each of its areas, including information services and marketing. Accordingly, open access as a cross-cutting issue is part of the library's training program, as well as its marketing activities.

Forschungszentrum Jülich, as a member of the Helmholtz Association, encourages its researchers to publish their scientific findings open access. In 2016, the Helmholtz Association adopted an open access policy, which defines 100% open access as a goal for all peer-reviewed publications starting from publication year 2023, which has to be reported at the beginning of 2025 [1]. Forschungszentrum Jülich also has its own publication guideline, which encourages scientists to publish green open access by depositing the post-prints of their peer-reviewed journal articles in the institutional repository.¹ To support green open access, the Central Library of Forschungszentrum Jülich implemented an institutional repository back in 2006. In 2012, it then combined this institutional repository with

¹ The definitions of green and gold open access used in this case report follow, e.g., [2,3].

its former publications database in the form of the JuSER publications portal [4]. In addition to the publication guideline, Forschungszentrum Jülich implemented a very clear and detailed open access strategy in 2015 [5]. It explicitly encourages the publication of the scientific findings of Forschungszentrum Jülich in gold open access journals. To support gold open access, the Central Library began paying publication charges in 2013, and in 2016, it established a publications fund for article processing charges [6], which explicitly excluded the payment of hybrid open access fees to prevent double dipping [7]. The publications fund has been very well accepted, and its expenditure increased by 40% from 2016 to 2017 [8].

Although the term open access is widespread among librarians and stakeholders of the open access movement, many scientists are not familiar with the implications, the potential or the impact of open access. To change this, information on open access has been gradually integrated into the library's information services and its training program over the last few years. In addition, the Central Library holds dedicated events like International Open Access Week [9]. Nevertheless, scientists have only gradually become aware of open access, and the number of open access publications has increased slowly. In 2017, the Central Library attempted to close this information gap anew since increasing awareness of open access is a struggle and the information must be communicated repeatedly and prepared and presented in new creative ways [10]. Therefore, the training program was extended and revised (see Section 2), and as part of International Open Access Week, individual events were offered for each of the 70 research institutes at Forschungszentrum Jülich. These events focused on the specific needs and workflows of scientists in each institute, and the series of events was called "Open Access Week on Tour" (see Section 3).

2. Training Program

Forschungszentrum Jülich offers its employees a broad internal training program, which is revised annually and published at the beginning of each year. The Central Library participates in this program, offering training courses in information literacy and publishing literacy [11] in response to the changing role of the library [12–14]. The spectrum of training courses for 2017 in the fields of publishing literacy and open access was expanded and redesigned.² The strategic objectives behind this project on new open access training courses were to close existing knowledge gaps, to reduce individual and thus time-consuming consultations and to raise the awareness among scientists of open access and scientific publishing. Based on the description of the initial situation and a stakeholder analysis, the following sections will highlight the gaps and problems in the 2016 training program, present the detailed project goals for 2017 and describe the concrete solution and training courses offered.

2.1. Initial Situation

The training courses offered by the Central Library of Forschungszentrum Jülich in 2016 comprised a total of 26 training courses. Sixteen of these training courses can be assigned to the field of information literacy and seven to the field of publishing literacy. The three remaining training courses do not fall under these categories and included, among other things, a workshop for administrative staff working in institute libraries.

Two of the seven courses in the field of publishing literacy dealt with bibliometric aspects, two with literature management programs and three with the writing and publishing of scientific papers. Two of the latter three training courses took three hours each and only marginally touched upon the subject of open access. The remaining training course was one hour long, focused exclusively on open access and the related services offered by the Central Library and was called "Open Access". One of the issues of the 2016 training program regarding open access was the focus on that single training course.

² The redesign of the 2017 training program was part of a project within the framework of the study program Library and Information Science at the Cologne University of Applied Sciences. The project report was published open access [15].

This approach failed to recognize that many scientists are not aware of what open access is, how it affects them and why they should deal with it. In brief, there was a lack of scientific context. A separate training course entitled “Open Access” is therefore unattractive for scientists and does not explain the benefits for them because it is not related to the research circle [16]. Furthermore, this course failed to address administrative staff or scientific coordinators in the research institutes. They also have to deal with open access and often have practical questions, but are deterred by too much theory. Additionally, with only a single training course per year, new developments and questions that arise repeatedly during the consultation process cannot be promptly incorporated into the annual training course and must instead be answered anew on an individual basis. This is very time-consuming.

The individual author consultations have already led to a continuous enhancement of the information presented on the intranet of Forschungszentrum Jülich in the past, e.g., new FAQs or a detailed description of the difference between green and gold open access. Instead of only using this up-to-date link between questions of authors and information services of the Central Library on the intranet, this project aims to incorporate this information quickly and directly into the training courses throughout the year.

The strategic goals of revising the training program were to expand the range of training courses in the field of open access in order to close the existing gaps, to reduce the individual support effort, to link the term open access to the research cycle and to impart the most important competences in the field of scientific publishing to the scientists of Forschungszentrum Jülich. The objectives were to develop training ideas and content and to ensure that the course instructors were the librarians directly involved in scientific publishing. The project on new open access training courses did not include a special evaluation of the training courses since standard evaluations of courses that are part of the official training program are performed by the Human Resources Development Department of Forschungszentrum Jülich.

2.2. Stakeholder Analysis

A stakeholder analysis for the project was prepared according to Alama and Gühl ([17], pp. 58–60). Stakeholders are divided into five categories: political environment, work environment, professional environment, organizational environment and projects in the environment. The result is shown in Figure 1. This stakeholder analysis, carried out in preparation of the project, played a key role in identifying the target groups of the new training courses and the actors within the library. It also provided important starting points for marketing, such as addressing the Executive Board³ and pointed out relevant incentives for the course participants, such as the guidelines of the research funders and the Helmholtz Association with which they have to comply.

The primary stakeholder in the political environment of the project is the library management. It is in turn influenced by the Board of Directors of Forschungszentrum Jülich. Forschungszentrum Jülich itself is a member of the Helmholtz Association. Since the Helmholtz Association is financed by public funds, the public can also be regarded as a stakeholder in the last instance. Other political stakeholders are research funders like the European Commission since their guidelines must also be taken into account for funded projects.

The political environment hosts the driving stakeholders for this project. As previously stated in Section 1, the Helmholtz Association adopted an open access policy with the goal of 100% open access in 2023 [1], and Forschungszentrum Jülich also has its own publication guideline, which encourages scientists to publish green open access by depositing the post-prints of their peer-reviewed journal articles in the JuSER publications portal. Many research funders have additional guidelines containing open access components, for example Horizon 2020 [18], BMBF [19] and

³ The Executive Board consists of the Board of Directors of Forschungszentrum Jülich and the managing directors of the research institutes.

Deutsche Forschungsgemeinschaft [20]. Due to these political considerations, the topic of open access is becoming increasingly important and is a central component of publishing literacy for scientists and scientific coordinators.

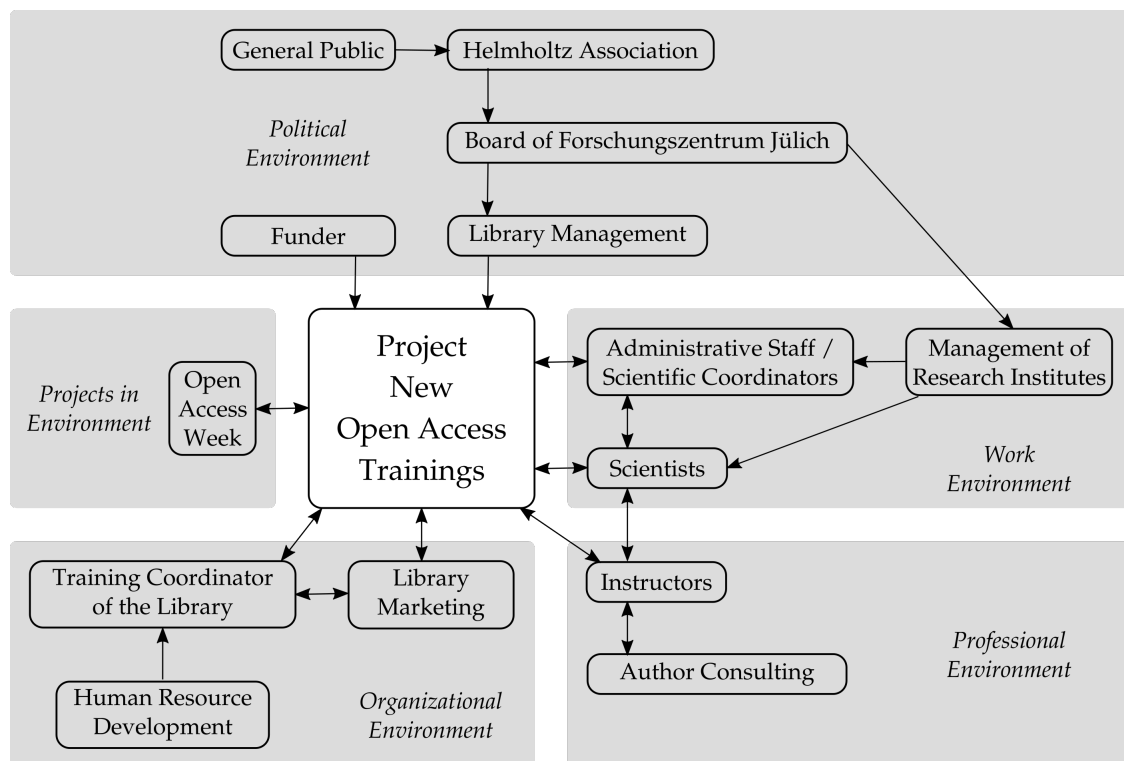


Figure 1. The stakeholder analysis of the project, which divides the stakeholders into five areas: political environment, work environment, professional environment, organizational environment and projects in the environment. The importance of stakeholders is reflected by their proximity to the project in the center.

The work environment contains the two stakeholders who are the target groups of the new training courses: the administrative staff, including scientific coordinators, and the scientists. They are located in the research institutes and are the most important stakeholders [21]. The management of the research institutes is comprised therefore of second-instance stakeholders in the work environment, who are themselves influenced by the political environment.

In the professional environment, the instructors of the training courses act as stakeholders. They are either part of the individual author consultation in the scientific publishing team or are strongly related to this team. As stated in Section 1, open access is a cross-cutting issue in the library. Therefore, the organizational environment includes the stakeholders involved in the creation and marketing of the training program within the library. This implies lively and early communication between all participants from the different teams of the library. This is achieved through joint preliminary meetings and continuous consultations. The results are always documented and, if necessary, distributed to all stakeholders within the library by e-mail. In addition to the training coordinator at the Central Library and library marketing, the professional environment also includes the Human Resources Development Department of Forschungszentrum Jülich, responsible for preparing the internal training program and the evaluation of the training courses included in the official training program.

Another project situated in the environment interacted strongly with the project on new open access training courses: International Open Access Week at Forschungszentrum Jülich, organized by the Central Library. This project will be presented in Section 3.

2.3. New Training Courses

Based on the previously-identified gaps and issues regarding publishing literacy and open access and on the questions that arise daily during individual author consultations (see Section 2.1), the scientific publishing team developed three new training courses for 2017 in cooperation with the training coordinator at the Central Library. These new courses focus strongly on the target groups of administrative staff and scientists. In principle, the training courses should be generally understandable and comprehensible to both target groups. The aim was to link the topic of open access to everyday administrative and academic life, as suggested by Schmitz [16]. As in previous years, all of the courses were publicized in the printed training program, on the intranet sites of the Central Library and the Human Resources Development Department and via a mailing list in the Human Resources training newsletter. In the following section, each training course and the related additional marketing activities are presented separately.

2.3.1. Training Course “Publication Fees”

The “Publication Fees” training course was prepared and conducted by the staff member who was also responsible for processing publication fees in the Central Library. The aim of this course was to explain the most important terms within the context of publication fees and to provide information and skills in dealing with different types of publication fees, the selection of journals and the specific publishing formalities at Forschungszentrum Jülich. The number of participants was limited to 12, and the course was planned to last 45 min. The course was designed mainly for administrative staff dealing with publication fees and was therefore conducted in German. It was held twice on two different dates.

The additional marketing activities prior to the first run consisted of an e-mail sent to the staff working in the institute libraries about two weeks before the event. The e-mail invitation targeted these employees and simultaneously asked them to forward the training invitation to potential, interested parties at the respective institute. As a result, both runs of the training course were fully booked.

The training content addressed questions that were frequently asked in individual consultations and was partially based on past training courses. After a general introduction to the topic of open access and an introduction to the different routes, the most important publication guidelines were briefly outlined in order to clarify the importance of the topic. The aim was to turn the participants into multipliers to communicate the topic of open access and its relevance to their research institutes. The main part of the training course then dealt with publication fees and how they are handled at Forschungszentrum Jülich [6].

The first run of the training course took longer than the scheduled 45 min as many questions arose, including general questions about open access, giving rise to a need for discussion. Presentation slides and contact details were sent to the participants as a follow-up. Furthermore, feedback from the participants, which was given in the feedback form of the Human Resources Development Department, presented in person or sent by e-mail, was incorporated into the second run.⁴ The suggestion that an English-language version should be offered was passed on to the project team planning International Open Access Week at Forschungszentrum Jülich, as described in Section 3.

⁴ The first run received a total grade of 1.61 from the participants, twelve of whom completed the feedback form of the Human Resources Development Department of Forschungszentrum Jülich, with a better grade of 1.42 for the content of the training course. The second run received a total grade of 1.54 from the participants, four of whom completed the feedback form, again with a better grade of 1.06 for the content of the training course. The grading translates to 1 for very good, 2 for good, 3 for satisfactory, 4 for adequate and 5 for poor.

2.3.2. Training Course “Publications and Research Funders”

The training course “Publications and Research Funders” was prepared and conducted by the librarian who was involved in the revision of the publication guideline of Forschungszentrum Jülich in 2017. The aim of the training course was to explain the most important publication guidelines to the participants and to provide them with information and skills on the various aspects, in particular the open access components. The number of participants was limited to 12, and the training course was planned to last one hour. The major target groups of the course were scientific coordinators and senior scientists dealing with third-party funding. The training course was held in German.

The response to the initially performed marketing activities related to this training course was not as successful as expected. Although information on the training course had been sent to the administrative staff of the institute libraries, not even a single enrollment had been received one week before the course. To remedy this, individual scientists in the research institutes and well-known scientific coordinators were contacted in person. In addition, the participants of the first run of the “Publication Fees” training course were contacted. As a result, two-thirds of the places were booked for the training course.

The content and structure of the training course explicitly included the creation of a common basis for all attendees [22]. All technical terms related to open access were explained in a clear and concise manner, as suggested by Dawson [10]. Starting with a formal introduction to the topic of publication guidelines, the most important guidelines for the scientists of Forschungszentrum Jülich were outlined and presented briefly. The common feature of the presented guidelines was identified as open access, which was then addressed in the subsequent part of the course. After a general introduction to open access, the most important terms in the publication process were introduced, and the open access specifications of the most relevant publication guidelines, for example, of Horizon 2020 [18], BMBF [19] and Deutsche Forschungsgemeinschaft [20], were described in detail. The aim was to work in a solution-oriented manner and to explain to the participants what they can and must do in order to comply with these guidelines. Finally, the most important services of the Central Library were presented in a compact format, and contact details were provided. A detailed reference list and useful links completed the slides.⁵

The training course was designed openly and included time for questions and a discussion that also touched upon topics not directly related to the presented publication guidelines. Overall, this created a very communicative and pleasant atmosphere. After the training course, the participants were sent the slides and contact details by e-mail. The slides were also published open access [22]. Feedback was very positive, and a suggestion was made to make the training course mandatory for all scientists dealing with third-party funding.⁶

2.3.3. Training Course “How to Publish”

The aim of the training course “How to Publish” was to explain the entire publishing process of journal articles to new scientists and to provide information and expertise on the various steps involved, particularly in regard to open access. The training course was prepared and conducted by a librarian with experience in publishing scientific papers. A senior scientist of Forschungszentrum Jülich was asked to act as an additional instructor. The senior scientist gave real life examples and shared personal experiences with the participants. The number of participants was limited to 12,

⁵ Quote from the feedback form: “For a one hour tutorial the material was just right, with plenty of references if needed for more detail.”

⁶ Quote from the feedback form: “This course should be *mandatory* for anyone involved with an EU project, whether as coordinator or WP leader. The instructor, Dr. Claudia Frick, really knows her material and can convey exactly what is needed to bring the dissemination side of project management up to DFG/HGF or EU standards.” The training course received a total grade of 1.15 from the participants, seven of whom completed the feedback form.

and the training course was planned to last two hours. Since the major target group of this training course was scientists, the training course was conducted in English.

This training course was advertised during the introduction to the Central Library for new employees. Several scientists registered directly for the course, and it was fully booked within a short time. Despite this, only one-third of the registered participants showed up. Presumably, the time frame between registration and the training course was too long, and a reminder may have increased the number of the participants. Accordingly, the instructors will send training course reminders in advance of each training course via e-mail starting in 2018.

The content of the training course addressed new scientists who have no or only minor experience in scientific publishing. After some basic information about the research cycle and the different publication types, the training course focused on academic papers including a short excursion to open and closed access journals. The main part of the training course covered the workflow of publishing a peer-reviewed journal article. The workflow was shown step by step, enriched with background information, and was visualized using an example journal article published by the instructor. All steps of the workflow were outlined, including reviewer comments. The subsequent part focused on what happens after an article has been published and introduced open access as a natural part of the workflow. The training course closed with a summary of all services offered by the Central Library for all stages of the publication workflow.

The training course benefited from the cooperation with the senior scientist who presented major insights far beyond the experience of the instructor. The training course was designed openly and included time for questions and discussions. The atmosphere was very communicative.⁷ Presentation slides and contact details were sent to the participants as a follow-up. The slides were also published open access [2]. The participants circulated the information within their research institutes, which led to the course being repeated as a personal consultation in 2017 with a smaller group of participants and without the senior scientist.

In 2018, this training course is again part of the training program, and the senior scientist has also agreed to act as an additional instructor. The content will be updated to include some issues suggested by the participants on the feedback form, e.g., information about authorship and scientific conduct. Additionally, an e-mail reminder will be sent in advance of the training course.

3. Open Access Week

As part of International Open Access Week from 2011 to 2016, the Central Library ran the webinar “Science is open – an introduction to open access”, which was offered by the Helmholtz Open Access Project Coordination Office. The first aim was to provide basic information on open access and to raise awareness of open access. The second aim was to stimulate contact between different stakeholders. The webinar was run at the Central Library and targeted PhD students. Following the webinar, Central Library experts answered questions on open access, the JuSER publications portal and other services offered by the Central Library. There were always less than 10 participants in the webinar (see Section 4).

Combined with the “Open Access” training course addressing scientists (see Section 2.1), this webinar addressing PhD students during International Open Access Week was insufficient to achieve the goals set by the driving political stakeholders (see Section 2.2). Therefore, library marketing initiated additional events as part of Open Access Week 2016. Two days of the Open Access Week were dedicated to short English-language events about open access and the services offered by the Central Library. During the remaining three days, invited publishers who cooperate with the Central Library ran webinars outlining their approaches to open access and their services for authors

⁷ The training course received a total grade of 1.34 from the participants, three of whom completed the feedback form, with the best grade for the didactic method.

affiliated with Forschungszentrum Jülich. All of these webinars and events took place in the Central Library. Unfortunately, there were very few participants. The Central Library experts noticed a lack of understanding of the distinction between gold open access and green open access and of the impact of these differences. Additionally, the relevance and usability of the JuSER publications portal was questioned by the participants.

Overall, this project in 2016 was deemed successful in increasing awareness of the term open access at Forschungszentrum Jülich. All employees were informed about the event in leaflets, posters, e-mails, intranet articles or newsletter articles. However, the project proved unsuccessful in informing many scientists of what open access is, how it affects them and why they should deal with it. Following the evaluation of Open Access Week 2016, the Central Library decided on a different approach for 2017: to provide separate events in German and English, to focus on the services offered by the Central Library and particularly to actively increase the level of participation. The approach combined local events in the Central Library, webinars and events at the research institutes. The latter was called “Open Access Week on Tour”.

3.1. Training Courses and Events Join Forces

Following the experiences in 2016, it was decided to focus only on one specific topic from the area of open access during the events of Open Access Week 2017. In order to meet the request for bilingualism and comply with user suggestions (see Section 2.3.1), the event “Publication Fees—Covering Costs for Scientific Publications” was offered in English. In addition to the usual presentation mode as a face-to-face training course in the rooms of the Central Library, the course was also offered as a webinar.

During International Open Access Week, another event explaining the basics of open access was advertised in English as a Q&A session in the Central Library and offered in German as an introductory webinar. The basis was provided by the experiences of the instructors who created the introduction to the Central Library for new employees and attended previous webinars offered by the Helmholtz Open Access Project Coordination Office.

In the run-up to Open Access Week 2017, marketing activities for open access were intensified. Employees of Forschungszentrum Jülich were informed about topics relevant to open access by means of internal news items. These topics were:

- JuSER as an OpenAIRE-compliant repository
- Combating the fear of predatory journals
- Increasing the range and reputation of the Journal of large-scale research facilities [23]
- Termination of agreements with Elsevier by Helmholtz centers [24]

Flyers and posters were created and distributed for Open Access Week 2017. On the Monday of International Open Access Week, Central Library employees manned an information stand in the staff canteen of Forschungszentrum Jülich. Under the heading of “Open Access and further developments in scientific publishing”, information about open access was actively provided, discussions with scientists took place and the Open Access Week events and the new “Open Access Week on Tour” series of events were promoted. This series was designed for Open Access Week 2017 with the main aim of disseminating detailed information on open access to scientists by offering individual sessions at each research institute of Forschungszentrum Jülich.

3.2. Top-Down Marketing

The Central Library defined an additional communication strategy for open access. The intention of this strategy was not to only address the scientists directly, but to also target management at the research institutes of Forschungszentrum Jülich identified as the main influencers in the stakeholder analysis (see Section 2.2). This approach was supported by Prof. Wolfgang Marquardt, Chairman of the Board of Directors. In 2015, he had set the objective that: “Our share of open access publications

should consistently be 10% above the global average.” [25] With the support of the Board of Directors in accordance with the Open Access Policy of the Helmholtz Association [1], three communication measures were defined and implemented.

- Corporate Communications featured an article in the in-house magazine “intern” of Forschungszentrum Jülich [26] and issued an additional press release.
- The official bodies of Forschungszentrum Jülich were used to circulate information, for example the open access rate was placed on the July agenda of the Jour Fixe of the Executive Board in 2017.⁸ Furthermore, the “Open Access Week on Tour” was mentioned at the Executive Seminar of Forschungszentrum Jülich.
- Referring to the gap between ambition and reality, an internal memo was sent from the management of the Central Library to the heads of all 70 research institutes of Forschungszentrum Jülich offering an event of “Open Access Week on Tour” at their institutes. It was signed by the open access representative of Forschungszentrum Jülich and delivered one day after the aforementioned Jour Fixe.

As part of this communication strategy, the “Open Access Week on Tour” series of events was planned to take place at some of the respective research institutes presented by instructors of the Central Library and the library management. The institutes determined the location of the event, the organizational framework and the language and co-determined the content, target group, group size and scope of the event. The target groups ranged from the management of the research institute to doctoral seminars and plenary meetings.

The marketing approach of open access described above enabled many institutes to be reached. The institutes at Forschungszentrum Jülich are largely independent. They often decide for themselves whether and to what extent they implement the suggestions of the Executive Board. In order to pursue the open access objective, they themselves can pass on information internally, ideally involve the Central Library or do nothing at present. From the point of view of the Central Library, five events would have been a success. Up to the end of April 2018, information events had been held at seventeen of the 70 research institutes. Three institutes were visited before International Open Access Week 2017; fourteen appointments were arranged subsequently, also for 2018; and nine additional institutes expressed interest. A total of 215 employees attended the events. The directors of the institutes were welcomed at almost all events. Additional events of the “Open Access Week on Tour” have been scheduled for 2018. A closer look at the institutes that already hosted an event or expressed their interest did not reveal any pattern or trend regarding the disciplines or the open access rates prior to the event, which confirms the cross-disciplinary success of the broad marketing approach.

3.3. Presented Content at “Open Access Week on Tour”

The information presented at the research institutes during the events of “Open Access Week on Tour” was customized to meet the needs and wishes of each research institute in accordance with Dawson [10]. Each presentation was composed of three main modules as shown in Table 1. The slides of the event at Peter Grünberg Institut: Functional Nanostructures at Surfaces (PGI-3) were published open access as examples [27]. The modularized presentation included consistent parts such as general information and the services offered by the Central Library related to open access. The submodule relating to motivation for the “Open Access Week on Tour” included a slide that was then customized for each institute. It showed the current open access rate of Forschungszentrum Jülich (see Section 4 for detailed information) and compared it to the rate of the research institute.

⁸ This Jour Fixe is a long-term scheduled, monthly working meeting of the Executive Board.

Table 1. The modularized structure of the content presented at the events in the research institutes, including the submodules and details of whether they were consistent or had to be customized for each research institute before the event.

Module	Submodule	Feature
general information	definition of open access	consistent
	motivation	customized
	routes to open access	consistent
	publication guidelines	consistent
	impact of open access	consistent
courses of action	information about the journals in which the scientists of the research institute published	customized
services offered by the Central Library	author's advice	consistent
	handling of publication fees and publications fund	consistent
	JuSERpublications portal	consistent

In addition, the slides dealing with the potential courses of action were customized based on those journals in which the research institute published in recent years. With the help of these customized slides, the training course identified and addressed the specific needs of each research institute, as suggested by Tappenbeck [28]. The published journal articles were extracted from the JuSER publications portal, and each journal was categorized as closed or gold open access. These data were additionally enriched with the self-archiving policies of all closed access journals. Figure 2 shows an example list of the journals in which a given research institute of Forschungszentrum Jülich published in recent years. One-third of the journals shown in the example are gold open access journals, whereas two-thirds are closed access journals. Only half of these closed access journals have an embargo period compliant with the maximum embargo period of six months accepted by Horizon 2020.

Knowing the number of published articles per journal, in addition to the information given in Figure 2, enables the research institute to calculate the maximum open access rate it could achieve without changing its publication behavior simply by using gold and green open access options. This in turn allows the institute to develop its own open access strategy based on real numbers and publication information. Since the impact factor of a journal is important for several research institutes and scientists [21], it was added to the journal list. It was used to highlight the actual influence of open access on citations, the increasing number of open access journals with an impact factor and a detailed explanation of how the impact factor is calculated.

The presentation closed with the benefits of green open access in the institutional JuSER publications portal, such as automatic harvesting by the repository of the European Commission [29] and indexing in BASE (Bielefeld Academic Search Engine) [30] and Unpaywall [31]. Finally, personal contact details on information concerning the different services and of the instructor were given.

A discussion followed the presentation about the different routes to open access, the different players involved and possible courses of action. Scientists themselves can decide to publish gold or green open access. Scientists who are also editors of journals can support the transition of scholarly journals to gold open access [32]. The Central Library promotes the transition to open access. It has established the publications fund for gold open access and offers an institutional repository where scientists simply have to upload their post-prints, and the library then checks the self-archiving policies of the journals for green open access. In addition, the Central Library is involved in negotiations with major academic publishers as part of the DEAL project aiming to achieve nationwide licensing agreements that will lead to automatic open access for all journal articles published by German scientists [33]. This currently concerns all journals highlighted in red in Figure 2 since all of them are

Elsevier journals, but it also addresses the journals published by Springer and Wiley. After the events, the slides were sent to the research institute staff by e-mail.

Title	Publisher	Journal Type	Embargo	Manuscript Type
Atmospheric chemistry and physics	Copernicus / EGU	Open Access		
Atmospheric measurement techniques	Copernicus	Open Access		
Journal of geophysical research / Atmospheres	Wiley / AGU	Closed Access	6	Publisher's Version
Bulletin of the American Meteorological Society	AMS	Closed Access	6	Publisher's Version
Geophysical research letters	Wiley / AGU	Closed Access	6	Publisher's Version
Earth's future	Wiley / AGU	Open Access		
Journal of the atmospheric sciences	AMS	Closed Access	6	Publisher's Version
Geoscientific model development	Copernicus	Open Access		
Annales geophysicae	Copernicus	Open Access		
International journal of modern physics / B	World Scientific Publishing	Closed Access	12	Post-Print
Reviews of geophysics	Wiley / AGU	Closed Access	6	Publisher's Version
Advances in meteorology	Hindawi	Open Access		
International journal of coal geology	Elsevier	Closed Access	24	Post-Print
Journal of climate	AMS	Closed Access	6	Publisher's Version
Atmospheric research	Elsevier	Closed Access	24	Post-Print
Atmospheric environment	Elsevier	Closed Access	24	Post-Print
Faraday discussions	RSC	Closed Access	12	Post-Print
Tellus / B	Wiley	Open Access		
Analytical and bioanalytical chemistry	Springer	Closed Access	12	Post-Print
Chemical geology / Isotope geoscience section	Elsevier	Closed Access	24	Post-Print
PLoS one	PLoS	Open Access		
Journal of the American Society for Mass Spectrometry	Springer	Closed Access	12	Post-Print
Journal of geophysical research / Space physics	Wiley / AGU	Closed Access	6	Publisher's Version
Journal of quantitative spectroscopy & radiative transfer	Elsevier	Closed Access	24	Post-Print
Journal of applied meteorology and climatology	AMS	Closed Access	6	Publisher's Version
Journal of paleolimnology	Springer	Closed Access	12	Post-Print
Review of scientific instruments	AIP Publishing	Closed Access	0	Post-Print
Annals of geophysics	INGV	Open Access		
Atmosphere	MDPI	Open Access		

Figure 2. This figure shows an example list of the journals in which a research institute of Forschungszentrum Jülich published in recent years. This list is enriched with information on the journal type and whether green open access is possible in the case of closed access journals. The embargo period is given in months from the date of publication in the journal for the related manuscript type. Closed access journals that meet the embargo period accepted by Horizon 2020 are highlighted in green, and those that also meet the embargo period accepted by the Helmholtz Association are highlighted in yellow. Closed access journals whose embargo period is not accepted by any of the above mentioned institutions are highlighted in red. The presented embargo periods were collected in April 2018.

4. Results and Lessons Learned

The new training courses in 2017 concerning open access attempted to address the needs and wishes of scientists and administrative staff. Feedback was very positive. During the training sessions, lively discussions took place, both between the instructor and the participants and among the participants themselves. Open access was recognized and accepted as a relevant topic within the daily lives of scientists. Based on the experiences with the training program in 2017, the same training courses will also be offered in 2018. In addition, a stand-alone training course entitled “Open Access” will be relaunched, since the topic is now well known throughout Forschungszentrum Jülich.

Feedback on the “Open Access Week on Tour” series of events was used by the Central Library to improve the presentation and adapt it to the expectations of the participants. This includes, for example, highlighting keywords on the slides and a visualization of the course of action. The comprehensive range of information on open access on the intranet of Forschungszentrum Jülich was expanded in response to the questions and suggestions of participants. For example, a link list for services with short descriptions of the services was created under the heading “Open Access Tools – Useful Websites”. The existing FAQs for the JuSER publications portal were revised and extended, for example to include an entry on “How should projects (funding, collaboration) and (doctoral) programs be entered?”

Direct feedback from the scientists revealed their major concerns: the potential lower reputation of open access publications, which was mostly linked to the impact factor of the journals instead of real citations of individual articles, the lack of importance of open access in the evaluation process of science output and some legal issues regarding self-archiving of their published articles. The presentation and the ensuing discussion addressed these issues very well, and the attendees realized that they can easily increase their open access rate with the support of the Central Library. They also realized how their work and the research community in general benefits from such efforts.

Figure 3 shows the success of the approaches and efforts of the Central Library in preparing scientists for open access. Until 2016, open access was only touched upon in a few training courses. These courses were attended by a lower number of participants than the 2017 training courses with a focus on open access. Looking at the results of the evaluation of the information events, the same pattern is clear: the number of participants in the “Open Access Week on Tour” series of events in 2017 exceeded the number for individual events of the previous years.

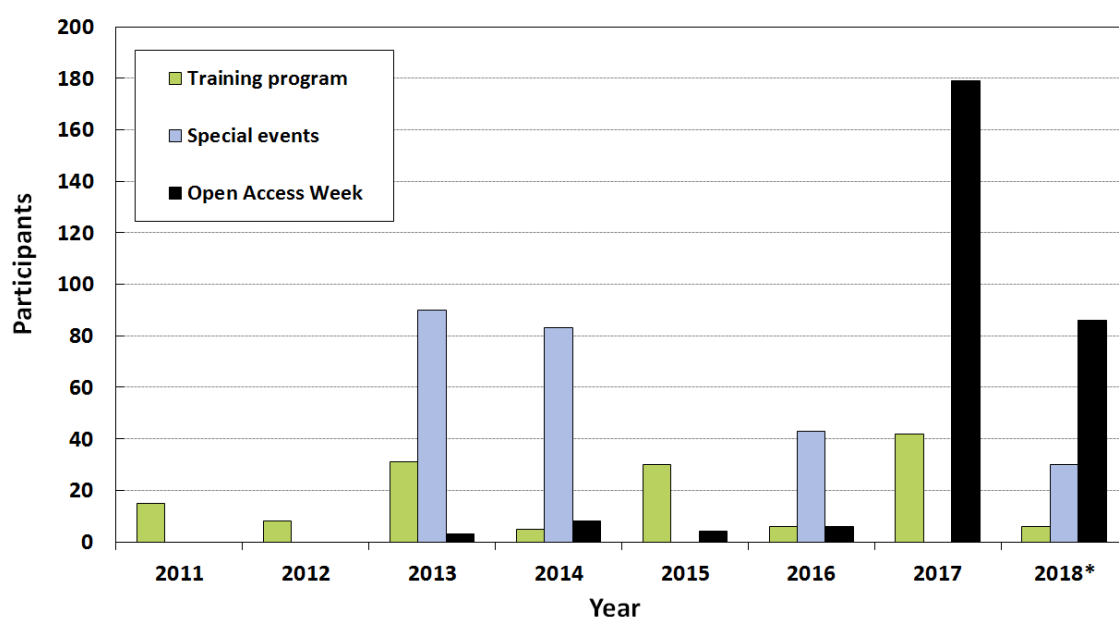


Figure 3. Number of participants in open-access-relevant training courses (green), events (blue) and International Open Access Week (black). In 2017, 42 scientists took part in open access training courses. In 2013, 31 scientists took part in open-access-related training courses. In 2013, 90 attended an event on copyright issues, in 2014, 83 a publishing house presentation on successful publishing, and in 2016, 42 an information event on research data management, all of which mentioned open access. In 2017, 179 scientists took part in the events organized as part of Open Access Week (black), and in 2018, 85 scientists have participated so far. Numbers for 2018* only from January to April.

The Central Library can now draw on its own experience for future goals and projects. The following points emerged as most important:

- A combination of several approaches is necessary to raise awareness of open access and to change the behavior of scientists regarding scientific publishing.
- A stakeholder analysis helps to identify the target groups of potential training courses and reveal their motivational factors for marketing.
- The specific marketing for events and the dissemination of general information should take place on several levels and be aimed at both stakeholders and target groups several times and in several ways.
- The implementation of training courses in the library and on site in the institutes must be flexible in terms of time and content.

- Standard content for training courses and presentations, such as basic information, concepts and course materials, should be enriched with customized data and tailored to address the level, background and discipline of the participants.
- The change in established communication channels will be noticed and, in addition to achieving the project goals, result in an increase in the reputation of the library as an innovation driver.

Overall, the approaches of the Central Library and its initiatives supporting scientists were appreciated, and feedback from both scientists and management on the new training courses and Open Access Week events was very positive. This feedback was reflected in an increase in the open access rate (see Figure 4). The open access rate for the publication year 2017 increased from 39% in July 2017 to 48% in April 2018. In addition, many authors also supplied open access versions of their publications from previous years.

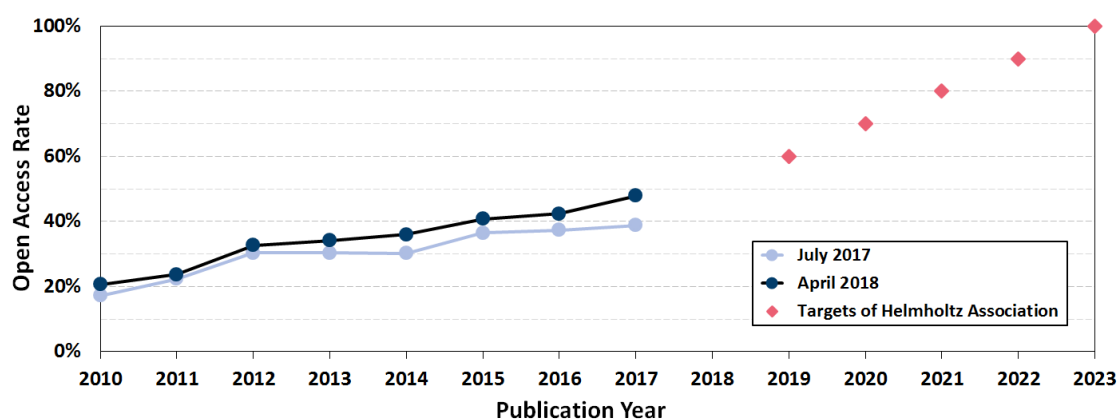


Figure 4. The open access rate of Forschungszentrum Jülich before the Open Access Week on Tour (July 2017, light blue) and in April 2018 (dark blue). The targets set by the Helmholtz Association are highlighted in red.

The open access rate was placed again on the April agenda of the Jour Fixe of the Executive Board of Forschungszentrum Jülich in 2018. The Central Library reported on the content of the events, the institutes visited and the improved open access rate. Due to the objectives of the Helmholtz Association and the support of Jülich's Board, the Central Library will continue to visit institutes and include the "Open Access Week on Tour" concept in its regular training program in 2019. With this outcome and the ongoing effort of all stakeholders, hopes are high that the targets set by the Helmholtz Association will be attained.

Conflicts of Interest: The authors declare no conflicts of interest.

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