

SLUB Dresden as a hybrid learning center in the project virTUos

J. Meyer

Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden (SLUB), 01054 Dresden

Abstract

As the university library of the TU Dresden, the Saxon State Library - Dresden State and University Library (SLUB) supports its development of a hybrid teaching offer that combines analog and digital settings with the principles of openness and sustainability. Digital learning and teaching at the TU Dresden receives a resounding boost with the new program "virTUos" (Virtual Teaching and Learning at the TU Dresden in an Open Source Context); the emphasis is on the suffix -OS. As a state library, SLUB Dresden is working together with the Saxony Center for Higher Education Didactics (HDS) on a state-wide digital strategy for studying and teaching that is committed to the FAIR criteria under the umbrella of Open Science.

Als Universitätsbibliothek der TU Dresden unterstützt die Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden (SLUB) deren Entwicklung eines hybriden Lehrangebotes, das analoge und digitale Settings mit den Prinzipien von Offenheit und Nachhaltigkeit vereint. Das digitale Lernen und Lehren an der TU Dresden erhält mit dem neuen Programm „virTUos“ (Virtuelles Lehren und Lernen an der TU Dresden im Open Source-Kontext) eine klangvolle Stärkung; die Betonung liegt dabei auf der Endung -OS. Als Landesbibliothek arbeitet die SLUB Dresden gemeinsam mit dem Hochschuldidaktischen Zentrum Sachsen (HDS) an einer landesweiten digitalen Strategie für Studium und Lehre, die unter dem Dach von Open Science den FAIR-Kriterien verpflichtet ist.

*Corresponding author: julia.meyer@slub-dresden.de

This article was originally submitted in German.

1. Publishing in an open scientific culture

Science policy is committed to the principles of openness and sustainability in order to make scientific processes and results more transparent, thereby ensuring quality and increasing social relevance. The new criteria based on Open Science pose major challenges for institutions in teaching, research, education and outreach, and require not only the necessary information technology systems but also an adapted evaluation system for measuring scientific performance. Governance must therefore be followed by sensitive change management in the scientific culture, which exemplifies an open attitude in (the) conduct of scientific practices and jointly tests and continuously improves them as a learning organization: no Open Science without Open Mind.

In their joint Open Access Resolution, the Dresden University of Technology (TUD) and the Saxon State Library - Dresden State and University Library (SLUB) commit themselves to openness and free availability of scientific publications. They are thus acting in a discourse space that already 20 years ago with the Berlin Declaration [1] pursued the goal of transformation from paid access via publisher distribution (closed access) to free access (open access) of research publications. The transformation initially consisted of replacing the purchase price for the exploitation of rights with a purchase price for the publication. In both cases, money flows to the publisher: in closed access, the trade and libraries pay for the acquisition of the publication; in open access, the authors pay the publisher for including the title in its program and then making it available free of charge. Publishers quickly adapted their business model to the new requirements and achieve high profit margins despite or thanks to the OA transformation. If it is a renowned publisher, authors in the OA process acquire for their money not only open access to their publication for all, but in addition the reputation associated with the publisher's name, which increases their impact factor and is relevant for measuring the performance of their scientific work. Through the Open Access Publica-

tion Fund provided by the DFG, researchers receive pro-rata financial support for their OA publications within the commercial publishing industry.

In 2014, the German Rectors' Conference was commissioned by the Alliance of German Science Organizations to launch the DEAL project to negotiate transformative nationwide "publish and read" agreements with the largest commercial publishers of scholarly journals on behalf of all German academic institutions, including universities, universities of applied sciences, research institutions, and state and regional libraries.

The DEAL negotiations aim to make all publications by authors from German institutions automatically open access, while guaranteeing attribution (CC-BY) and peer review. The DEAL institutions are to receive permanent full-text access to the entire title portfolio (e-journals) of the selected publishers as well as a pricing model based on the volume of publications ("publish & read model"). While DEAL agreements have been successfully negotiated with Wiley and Springer Nature, they have yet to be concluded with Elsevier.

At the same time, the scientific community is stepping up its efforts to make OA publishing commercially free and publicly owned. Research institutions, together with their academic libraries, are developing their own digital publishing infrastructures that not only host the finished pdf files and provide free access, but also support the entire publishing process from writing to editing and typesetting or layout to scientific quality assurance through review procedures. Heidelberg University Publishing [2] was the pioneer for publishing support independent of publishers, primarily in the humanities. In the meantime, TIB Hannover provides non-commercial publishing services with TIB Open Publishing, preferably for publications in the natural sciences and technology. [3] The new Open Access publisher Berlin Universities Publishing (BerlinUP) is operated by the Berlin University Alliance (BUA). [4] The Freie Universität Berlin, the Humboldt-Universität zu Berlin, the Technische Universität Berlin, and the Charité - Universitätsmedizin Berlin have joined forces to form this alliance. BerlinUP enables the

scientists of the four institutions to publish the results of their research activities in quality-assured books and journals and supports them with corresponding consulting services. As one of the largest academic libraries in Germany, SLUB Dresden also offers publisher-independent, quality-assured, and sustainable OA publishing services and will continuously expanding both its technical infrastructure and consulting services.

According to the Council of Science and Humanities, the transformation of scientific publishing should be completed within the next few years, and the open publication of scientific results should become the standard, thereby increasing the quality of scientific research and accelerating scientific progress. Open access should also make scientific findings more readily available outside the scientific community, so that an increased transfer performance and higher social effectiveness of science can be achieved. Finally, competition among commercial and public publication service providers should reduce the unique position of publishers and improve the negotiating position of scientific research institutions vis-à-vis publishers. Overall, this transformation process aims to improve the innovativeness, cost transparency, and cost efficiency of the publication system, summarizes the Council of Science and Humanities in the position paper "Recommendations for the Transformation of Scientific Publishing to Open Access" [5]. It recommends first establishing sufficiently adequate and inclusive OA publishing conditions, and then extending the rules of good scientific practice to include OA publishing. In doing so, it follows the commitment to OA and Open Science in the coalition agreement 2021-2025 of the current German government [6] as well as the UNESCO Recommendation on Open Science [7] at the international level.

While Open Access initially focused on open access to scientific publications, Open Science also targets the upstream and downstream processes of scientific work and publishing. Accordingly, in its most recent position paper, the DFG considers Open Science to be an integral part of the overarching discourse on scientific culture. [8] In the sense of good scientific practice, Open Science practices enable

processes of quality assurance, reproducibility and replicability in addition to facilitating the acquisition of knowledge, as they contribute to better traceability of methods and results. In addition to open access to scientific and scholarly publications, the DFG is therefore focusing on open data, research and infrastructure software (open code) and their legally protected subsequent use.

According to the DFG, the term "open science" is associated with high expectations of science. In order to be able to meet these expectations, awareness must first be raised of the fact that, in the context of open research, all actors, from researchers to infrastructural institutions to data intermediaries, bear a greater responsibility: not only with regard to the selection of publication organs and portals for publication, but also with regard to the curation of research data, metadata and contextual information. In addition, within the framework of Open Science, the group of users will be given greater responsibility, on the one hand with regard to research and legally secured subsequent use, and on the other hand with regard to checking and interpreting the freely accessible information. These preconditions must now be developed and ensured on an individual level through suitable training and educational measures and on an institutional level through incentive and support structures in the scientific environment. SLUB Dresden reacted to this by opening the Open Science Lab, where trained staff (data stewards) provide a corresponding range of consulting and training services to support research.

The DFG also calls on the scientific institutions to develop appropriate governance in order to establish the necessary infrastructures for open science on a binding basis. In its most recent position paper, it also critically discusses the performance measurement of scientific work, which is (still) intertwined with the publication system. [9] The international initiatives "San Francisco Declaration on Research Assessment" (DORA) [10] and "Coalition for Advancing Research Assessment" (CoARA) [11] are working on the development of alternative models.

To what extent can these challenges posed by Open Science and the associated tasks for

scientific institutions be transferred to the field of teaching and learning?

2. Publish open teaching and learning materials

It is surprising, after the commitments to Open Access and Open Science cited above, that the German Council of Science and Humanities makes no direct reference to this in its "Recommendations for a Sustainable Design of Teaching and Learning" [12], assuming that scientific teaching should aim at training researchers in the context of Open Science. However, it does address some of the challenges posed by facilitated digital access:

"The digital transformation is fundamentally changing educational processes and knowledge cultures. Today, an overabundance of information is available whose reliability, quality and truth content are not sorted and evaluated by any authority. In the future, a course of study should therefore enable students even more than before to evaluate and contextualize information and to acquire new knowledge independently. This will also create conditions to prepare students for lifelong learning." [12]

Surprisingly, open educational resources (OER) do not play a significant role in the recommendations. Only in the subchapter "Teaching as a collaborative task" [12] is the sharing and mutual review of OER mentioned among other recommendations for cooperative division of labor. The use of OER is recommended here as a means to the end of making work easier in the face of high student numbers. Other benefits cited in the use of OER include the increased reputation of instructors due to greater visibility, as well as the associated opportunity for financial support from the university. Even if only in passing, transparency as a relevant criterion in the context of Open Science is mentioned, as well as quality assurance through peer review. Finally, the Council of Science and Humanities points to the still outstanding and to be adjusted assessment of the teaching load, since the production and adaptation of OER are not adequately taken into account in contrast to face-to-face courses. [12]

Although the "Recommendations for a Sustainable Design of Teaching and Learning" of the German Council of Science and Humanities are still far from the expectation of an open standard for OER to be established as in the case of Open Access, open access to teaching and learning materials is under the same auspices as open access to research publications and will have to develop accordingly under the umbrella of Open Science as a standard.

At TU Dresden, therefore, an initiative has emerged that highlights the benefits of OER and pursues the goal of an OER policy by the university management, which ties in with the joint Open Access Resolution of TU Dresden and SLUB Dresden. [13] On the one hand, the stakeholders point out that knowledge created in an open scientific culture must be available to all and that OERs play an important role in this. On the other hand, in increasingly complex teaching and research contexts, constructive cooperation between teachers and learners under a common objective in new communities of practice will be very important for the significance that teaching and research locations can have in the international higher education landscape in the future. With an agreement on OERs to be striven for, they want to lay a foundation for contributions from teaching and research in education and outreach to the knowledge society of the 21st century.

Together with SLUB Dresden and the Center for Interdisciplinary Teaching and Learning (ZiLL) at TU Dresden, they would like to create the framework for this. Teaching and learning materials used at TU Dresden should be freely available as Open Educational Resources (OERs), publicly accessible and barrier-free.

SLUB is monitoring the data management of OER: it indexes the metadata of OERs and ensures their cataloging in order to meet the internationally valid FAIR criteria: Findable, Accessible, Interoperable, Re-usable. For teachers at TU Dresden, SLUB offers support in license management and technical issues in the course of creating and publishing their own OERs, while ZiLL assists in the didactic conception of OERs. The advantages of OER

are summarized by the stakeholders in the cited position paper:

The increasing dissemination of OERs helps teachers to create qualitative teaching materials more quickly, as they can draw on a large and diverse range of open sources. This gives them more time for research and innovation in teaching. As with scholarly publications, making re-used content recognizable contributes to the reach and reputation of educators. The cross-regional visibility of OERs also facilitates professional exchange and interdisciplinary collaboration. Finally, the openness of teaching and learning materials is the basic prerequisite for participatory knowledge acquisition without social barriers. With the publication of OERs, learners are given the opportunity for feedback and active participation, which in turn increases the quality of the teaching materials.

3. CC licenses and standardized metadata for OER

SLUB and ZiLL have designed a consulting and training offer that provides concrete techniques, tools, and presentation forms for the creation and publication of OER, primarily for the frequently requested topics of license management and metadata, as well as for didactic issues.

Authors of OERs determine for themselves the extent to which their materials may be reused by third parties by licensing them under Creative Commons (CC) and thereby transparently regulating their reuse. These standard licenses allow authors to control the reuse of their OERs in terms of attribution, modification and commercial use. [14]

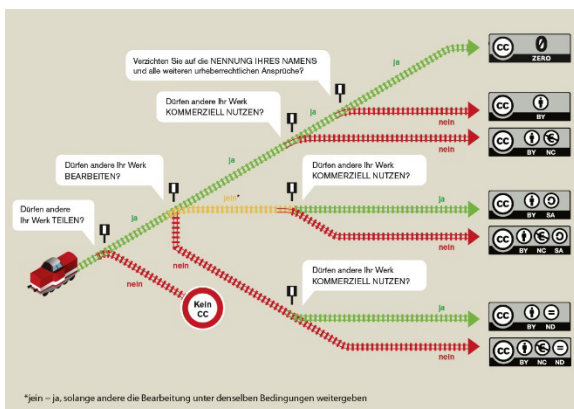


Fig. 1: Graphic: Jöran Muuß-Merholz for wb-web, edited by Michael Menzel. License: CC-BY-SA 3.0

In order to ensure their correct citation and findability, OERs must be provided with sufficiently standardized metadata that show information about authorship, the reason for their creation, and when they were created. The use of standardized file formats that can be used across platforms is an important prerequisite for this.

In addition, OERs must be available on technically suitable and maintained web-based platforms so that they are freely accessible to all. In this context, OERs are not subject to any media boundaries; they include scripts, exercises, lecture slides, podcasts, videos, and their combination(s), among other things. Due to this media complexity, OERs place higher demands on the technical infrastructure of a publishing platform than the pure text formats used in OA publishing to date. Until a central educational platform will be available, SLUB Dresden supports with the self-developed OER display to make teaching and learning materials of different platforms from Opal to Videocampus to Spotify and Youtube visible and reusable in a showcase across media types. The OER displayed there can also be found worldwide via the SLUB catalog and the reference systems linked to it. The code for the OER display is available as open source software for reuse on GitHub.

The Free State of Saxony has commissioned the Higher Education Didactic Center Saxony (HDS), the Working Group E-Learning of the State Rectors' Conference (LRK) and the SLUB Dresden with a study to determine the needs of Saxon universities with regard to a state-wide educational platform for OER. At the same time, it is developing a strategy paper on the digital transformation at Saxon universities that takes a look at the areas of research, education, and administration and asks about the change processes, challenges, and opportunities for optimization resulting from digitization in the university landscape. The results will be incorporated into Saxony's higher education development plan.

A national education platform funded by the Federal Ministry of Research and Education is to be established by 2025 and facilitate the discoverability and secure subsequent use of digital education offerings. As a met-

aplatform, the digital education space is to represent an education ecosystem based on open standards, common formats and interoperable structures that is internationally connectable.

4. SLUB as a hybrid learning space in the project virTUos

The goal of strengthening digital teaching, as formulated in the coalition agreement of the Federal Government, is implemented by the Foundation Innovation in University Teaching with the funding guideline "Strengthening University Teaching through Digitization". The TU Dresden is participating in this measure together with the SLUB Dresden, the University of Continuing Education of the TU Dresden (DIU) and the Carus Academy at the University Hospital. Its project virTUos (virtual teaching and learning at TU Dresden in an open source context) is

a cross-departmental network for the further development of digitally supported university teaching with the strategic goal of anchoring modern teaching and learning concepts in the curriculum and is funded as an individual project from 2021 to 2024. In the network, concepts of open teaching as Open Educational Practices are developed interdisciplinarily and further developed and used across universities.

At the project launch of virTUos, Lasch reflects on the project within a culture of digitality according to Stalder and points out how the institution of the university can discard its old orders in the face of the digital transformation and commit to openness: through a common goal and value orientation for more transparency, generosity and participation. [15]

In the virTUos project, the (scientific) culture of digitality is characterized by three aspects of openness: direct publishing on a blog, sharing and reusing open teaching and learning materials (OER) and open educational practices (OEP), and finally, participatory collaboration with students and citizen science researchers in an open university where learning takes place together, about each other, from each other, and with each other. Even

though Open Science urgently needs the appropriate governance of the university leadership, open teaching cannot simply be decreed, but can only be worked out together and needs role models that inspire confidence and invite participation. The virTUos project creates experimental spaces for participatory learning in order to provide an institutional framework for the possibilities of change and design of digitally supported university teaching. Therefore, in addition to the strategic orientation, it also takes a look at concrete challenges: In digital teaching at TU Dresden, isolated solutions geared to specific fields of application can still be found, making data exchange difficult, and common technical platforms such as Opal or Videocampus are also reaching their limits. Furthermore, relevant event formats such as internships have hardly been implemented digitally due to their special didactic challenges. In addition to a strategic goal orientation that strengthens openness and collaboration, it remains of particular relevance for academic teaching that innovative and successfully evaluated virtualizations are anchored in the long term in course development, in the interpretation of examination law and in the curricula.

Especially in the design of experimental spaces for open educational practices (OEP), SLUB bears a great responsibility for university teaching with its learning spaces and services and shapes this area of responsibility in a participatory way with sustainable human and spatial resources. In our Labs, teachers and students from TU Dresden or other universities work with the library's subject experts as well as with their volunteer and citizen science colleagues and learn with and from each other in various projects. In the SLUB TextLab, methods and practices of digital humanities are tested in an application-oriented way, for example in the context of the virTUos sub-project Digital Herrnhut [16] or in the master's program Digital Humanities. In the Open Science Lab, new technical infrastructures for publisher-independent Open Access publishing are being created in cooperation with the TU Dresden. These infrastructures integrate the aspects of quality assurance through review procedures described above, as well as alternative models for performance meas-

urement and new formats of scholarly communication. The publishing of research data, of research software and last but not least of Open Educational Resources under consideration of the FAIR criteria are further components of the service offer of the Open Science Lab. The SLUB Makerspace has set up podcast and video studios, including VR and AR technology that can be borrowed, which teachers can use to produce audio and video material for OER. SLUB experts advise on the use of the technology as well as on license management according to Creative Commons or on the FAIR criteria for publication. Colleagues from the ZiLL are available to answer questions about higher education didactics and round off the range of services for OER.

The steadily increasing numbers of visitors to the library show that, despite or even because of increased digital teaching, the various learning spaces in the library are of great importance to students, be they individual workstations or group workstations, or the cafeteria Biblounge as a casual meeting place. Unlike in teaching, where students in many cases opted for virtual participation after the campus reopened with hybrid offerings, they quickly returned to visiting the library in presence after the pandemic-related closure to learn and work together in a variety of ways, or use it as a meeting place for other activities. A seemingly paradoxical effect was already evident in the library statistics before the pandemic: while the number of visitors increased continuously, the number of actively valid library user cards decreased at the same time. The SLUB user card is necessary for borrowing print or AV media as well as for magazine orders and reservations, and the lower number of holders of a user card illustrates that these classic services of local lending have become less relevant after about three quarters of the annual acquisition budget has gone into electronic media. Library visits, on the other hand, are also possible without an SLUB user card, and all digital library services from online literature supply to the use of online consulting and training services related to research and literature management are available to members of the TU Dresden in the library rooms via Eduroam and ZIH login even without an SLUB user card.

It can be deduced from this that students value their library as a hybrid place of learning. They stay in the rooms to use digital offers and to learn together.

Conclusion: By participating in the virTUos project, SLUB is gaining further experience as a hybrid place of learning and will consistently align its services with the requirements of virtual teaching and learning at the TU Dresden in an open source context. It will also intensify user research in order to better differentiate its hybrid services: Which services are relevant on-site, which services are preferred online? How do the premises have to be equipped technically and with personnel in order to offer optimal service as a hybrid learning space? SLUB contributes its experience and expertise not only in the cooperation with TU Dresden, but state-wide through the cooperation with the Higher Education Didactic Center Saxony and the AK E-Learning of the State Rectors' Conference. It is a competent companion of the digital transformation at Saxon universities and pursues the goal of an open scientific culture of digitality [15].

Acknowledgement

I would like to thank Alexander Lasch and the cooperative team of authors from the SLK faculty, ZiLL and SLUB for creating and making available the OER Resolution and OER FAQ for subsequent use.

Literature

- [1] Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities https://openaccess.mpg.de/67605/berlin_declaration_engl.pdf.
- [2] https://heiup.uni-heidelberg.de/about_us/mission_statement (accessed 12/28-23).
- [3] <https://www.tib-op.org/ojs/index.php/index/tibop/about> (accessed 12/28-23).
- [4] <https://www.berlin-universities-publishing.de/ueber-uns/mission-statement/index.html> (accessed 12/28-23)
- [5] German Council of Science and Humanities. 2022. recommendations for the transformation of scientific publishing to open access; Cologne. DOI: <https://doi.org/10.57674/fyrc-vb61>.
- [6] Cf. Coalition Agreement 2021-2025 between the Social Democratic Party of Germany (SPD), Alliance

- 90/The Greens and the Free Democrats (FDP), p. 21 and p. 24.
- [7] Cf. <https://en.unesco.org/science-sustainable-future/open-science/recommendation> (accessed 12/28-23).
- [8] Deutsche Forschungsgemeinschaft. 2022. Open Science as part of the culture of science. Positioning of the German Research Foundation. Zenodo. <https://doi.org/10.5281/zenodo.7193838>.
- [9] Deutsche Forschungsgemeinschaft | AG Publikationswesen. 2022. scientific publishing as the basis and shaping field of science evaluation. <https://doi.org/10.5281/zenodo.6538163>.
- [10] Cf. San Francisco Declaration on Research Assessment <https://sfdora.org/> (accessed 12/28/23).
- [11] See Coalition for Advancing Research Assessment <https://coara.eu/> (accessed 12/28/23).
- [12] German Council of Science and Humanities. 2022. recommendations for a sustainable design of study and teaching; Cologne. <https://doi.org/10.57674/q1f4-g978>.
- [12] Ibid., p. 29.
- [12] Ibid., p. 48f.
- [12] Ibid., p. 80.
- [13] Author:insideteam Faculty SLK, SLUB, ZiLL. 2020. OER. For an advancement of university teaching. CC0, edited by Julia Meyer <https://www.slub-dresden.de/mitmachen/open-educational-resources/oer-display>.
- [14] Author:insideteam Faculty SLK, SLUB, ZiLL. 2020. OER. FAQ on open teaching and learning materials. CC0, edited by Julia Meyer <https://www.slub-dresden.de/mitmachen/open-educational-resources/oer-display> (accessed 12/28/23).
- [15] Alexander Lasch. 2021. (Science) culture of digitality. In: Lessons Learned I. DOI: <https://doi.org/10.25369/ll.v1i1/2.27>.
- [16] Alexander Lasch, Dominik Hetjens & Robert C. Schuppe. 2022. DigitalHerrnhut. New approaches to historical linguistics through digitally supported learning environments - a workshop report. In: Jörg Meier (Ed.). Language history and education (Jahrbuch für Germanistische Sprachgeschichte 13). Berlin, Boston: De Gruyter. Pp. 129-146. DOI: <https://doi.org/10.1515/jbgsg-2022-0009>.