

Bodo Rödel

Open Access Case Study: How is the Situation in VET Research in Germany?

Questions and perspectives



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Contents

1. "Data is the new oil"	4
2. Open Access put into context	5
3. Developments in vocational education and training research in Germany	12
4. Research project: Open Access in Vocational Education and Training	14

1. "Data is the new oil"

Presenting at the WORK2017 conference, Professor Martin Kenney stated that "data is the new oil", thereby referring to the so-called digital platform economy which paved the way for the rise of companies like Google and Amazon. However, data is not only of interest to the economy. For several years, the usage of data has been discussed in the scientific community in the context of "open data", "data and text mining", or "open science". With regard to access to data and scientific results, one important element is open accessibility of academic research publications: Open Access

2. Open Access put into context¹

This chapter provides a fundamental explanation of the Open Access concept and presents it in light of the academic research publication process. Open Access is understood to mean free accessibility of academic research publications. “Free”, or “open”, relates to three aspects in this regard:

1. Access should be possible free of charge.
2. There should be as few legal restrictions as possible.
3. Access should be possible without technical barriers.

The academic research publication process

The aim is to illustrate the Open Access concept on the basis of the academic research publication process. Academic researchers, who are often financed via the public purse, carry out their work and submit their results to specialist journals belonging to publishing houses. At the same time, they grant these publishing houses rights of exploitation in their articles. These rights are either restricted with regard to time, place and content or unrestricted. The publishing houses produce the specialist journals, and this knowledge is then in turn bought back by public libraries, again using public funds. This is a process in which the taxpayer pays twice – once for the creation of knowledge via research and then again for the opportunity to read about this knowledge in journals.

How has this obviously remarkable chain of exploitation come into being? The history of academic research journals can be traced back as far as the 17th century. One of the first journals, *Philosophical Transactions*, made its initial appearance on 6 March 1665. Up until the 1960s, academic research journals were mostly prepared by individual professional societies. Researchers passed on these journals and received further material in return. Dissemination of research results thus incurred a low level of cost and remained in the hands of those who produced them, the academic researchers themselves. These journals were also of no particular economic interest to publishing houses because they addressed only a small and specialised target group. This situation did not change until the end of the 20th century, when numerous new and oftentimes private universities were founded. The citation databases Science Citation Index and Social Sciences Citation Index (SSCI) were also introduced in 1963 and 1973, respectively. These databases now made it possible to search which articles were cited by other articles. This enabled users to find relevant articles, track research activities and identify who is citing research results. These citation indexes ultimately formed the basis for the development of the Journal Impact Factor (JIF), which helps to determine how often per year an article published in a certain journal is cited in other academic research articles. The JIF (allegedly) allows the academic research quality of a journal to be measured and the publication performance of an academic researcher to be evaluated. The Impact Factor is usually calculated from the Science Citation Index or Social Sciences Citation Index using the following formula: the number of times an article is cited over the past two years divided by the number of articles

¹ This text served as a basis for a contribution in a forum at the WORK2017 (16–18 August 2017, Turku, Finland). Sections 1 and 2 are taken from the specialist article “Open Access in der Berufsbildungsforschung”, Bonn 2017, urn:nbn:de:0035-0651-9 [Open Access in Vocational Education and Training Research] by Bodo Rödel, which also contains further references.

published over the past two years. The Impact Factor has thus established itself as a means for ranking specialist journals. Although we are unable to deal with the meaningfulness of the SSCI and of the Impact Factor in any further detail at this point, it is important to note that the JIF represents the introduction of an evaluation criterion which was subsequently used to define particularly important journals. Over the years, these highly acclaimed journals have become indispensable for individual academic research disciplines. Ever since, libraries have needed to acquire them in order to represent the current research status within the respective specialist field. The research historian Jean-Claude Guédon accordingly refers to these journals as “core journals”. “Core journals” within individual academic research disciplines advanced to become objects worthy of consideration within the market and were bought up by publishing houses as a consequence.

Economisation of knowledge

The publishing houses therefore discovered these specialist journals as a lucrative business model. Since the 1970s, this has led to a dramatic rise in the prices of specialist academic research journals. Depending on the source, the talk is of a price increase of between 180 and 300 per cent.

For this reason, the sales recorded by the major academic publishing houses also come as no surprise. Examples include Pearson (€5.81 billion in 2014), Wiley (\$1.7 billion in 2014), Thomson Reuters (€4.72 billion in 2014) and Elsevier (€4.4 billion in 2014). The operating margins (i.e. the yardstick of success represented by the ratio between profit and turnover) achieved by these companies are considerable indeed. It is likely that they are exceeded only in a small number of other branches of industry. This can be illustrated, for example, by a comparison between Elsevier (2012 return on sales: 38 per cent) and Apple (2012 return on sales: 27 per cent). It becomes apparent just how remarkable these developments in the specialist academic research journal market are if we view them in light of the strong general trend towards a decline in sales in the rest of the market for newspapers and periodicals.

These price rises are to the detriment of a journal's readership and affect the libraries in particular. To sum up, therefore, we may say that the exorbitant profits of the publishing houses are generated from publications by academic researchers that are essentially funded by the taxpayers' money.

As a consequence, the economic logic behind academic research communication rests on the assertion of rights of exploitation, which restricts access and availability. For this reason, Dr Georg Botz from the Max Planck Society in Germany speaks of an “artificial scarcity of access to knowledge. Research works are published by academic publishing houses in thousands of journals. These are only available to persons able to access the relevant journals via their library. Knowledge, so to speak, is stored in countless silos.” The publishing houses are the only exclusively private sector based stakeholders which also draw considerable financial resources from the academic research publication system. Whether the service they provide in return is adequate remains questionable.

The challenge that the digital shift is bringing in its wake has already been described by the French post-modernist philosopher Jean-Francois Lyotard as an “economisation of knowledge”. The production of knowledge no longer serves the expansion of the knowledge base. Its objective is to sell this store of knowledge. This means that the field of academic research is integrated into the market economy, although its original basis was in a non-commercial incentive system – achieving an academic research reputation via placing articles with recognised specialist journals and prestigious publishing houses.

Against the background of the importance of the “core journals”, the exorbitant price increases and the economic logic involved, the Open Access proposal becomes more understandable. Its aims are to create access free of charge to academic research publications and to ensure the widest possible dissemination of research results. Or, in other words, academic research communication should not be controlled by the major publishing houses.

The market power exercised by the publishing houses was, therefore, a crucial premise for the emergence of the Open Access movement. This market power is essentially based on three points:

1. The monopoly status of the specialist journals
2. The low contribution the publishing houses themselves make to the value-added chain
3. Restrictive exploitation rights

A change in communication processes

There is, however, a further reason for the genesis of Open Access. Prof. Jeanette Hofmann and Benjamin Bergenmann (both from the WZB Berlin Social Science Center) believe that its emergence is due to the change in communication processes which took place in the 1970s, particularly with regard to technology and the natural sciences. At this time, academic researchers were beginning to send their articles to colleagues, initially by post and later via electronic means following the development of the Internet. These “pre-prints” were also ultimately digitally archived and thus made available to a wider readership. The technical opportunities for the electronic storage and sending of research results, which were new at the time, therefore became a further driver of Open Access. This is of interest to the extent that the focus here is genuinely on free access for the purpose of collaborative work rather than on cost reduction. This thought then becomes visible in the idea of “Open Science”, where it is developed to its logical conclusion. What remains is the non-financial remuneration system for academic research authors. Rather than receiving monetary reward, they benefit from the broad dissemination of their work, from references to their articles in the form of citations and from the associated enhancement of their reputation.

The Open Access principle

Following the above analysis of the market mechanisms and drivers of Open Access, we now plan to undertake a more precise consideration of the Open Access principle itself. Fundamental account needs to be taken of the fact that the term Open Access conceals various positions, programmes and initiatives, all of which have one aim. This is to facilitate general availability of academic publications which have been financed using taxpayers’ money. This demand was stated as long ago as 2001 in the so-called Budapest Open Access Initiative Declaration (see www.budapestopenaccessinitiative.org/). This topic has been, and still is, surrounded by a multitude of disputes. Some of these involve reservations and contributions to the debate that accuse the Open Access project of totalitarian traits and view publishing houses as the guardians of liberty.

Whereas the Open Access movement was initially restricted to a number of disciplines in the natural sciences such as physics and biology, the 1990s saw the emergence of an increasing number of full-text databases, referred to as repositories. In the wake of the price policy adopted by the publishing houses, the Open Access movement has finally begun to gather significant momentum since the 1990s. The Directory of Open Access Journals (<https://doaj.org/>) was

created in 2003. It defines minimum standards for Open Access journals, such as scholarliness, free access and originality. The Creative Commons Initiative (<https://creativecommons.org/>) was instigated in 2001. This licensing model enables the opportunity to use academic research publications in accordance with the Open Access principle to be enshrined in law.

New business models also ultimately emerged. Two of these newly established approaches are of particular interest for the development of Open Access. In 2000, the publishing house Biomed Central (www.biomedcentral.com/) was set up along Open Access lines. Its founder Vitek Tracz introduced the new business idea of shifting costs from the readership to the authors via so-called Article Processing Charges (APC). If authors wish to publish an article in an Open Access journal, the costs of publication are paid by the author, by the institution for which he or she works, or by a third party or institution. In return, Open Access is then provided. This business model was so successful that Springer decided to acquire Biomed Central in 2008. The Public Library of Science (www.plos.org/) was also established in 2001 in the research area of biomedicine. PLOS also aligns itself to financing via APCs.

In English-speaking countries in particular, a distinction is currently drawn between two versions of Open Access:

1. “Gratis Open Access” mainly refers to free access without incurring cost, whilst
2. “Libre Open Access” denotes access which is both free of charge and of legal barriers (restrictions on re-use). The latter represents Open Access in the truest sense of the term and as defined in the Budapest Declaration.

Therefore, one needs to differentiate between two questions. First of all, is publication free of charge/cost for the reader? Secondly, can the publication be freely used without legal restriction?

The following delineations are also made in the area of Open Access:

1. Publication of academic research work in repositories – referred to as “Green Open Access” or “self-archiving”. Such articles either have already appeared (“post-prints”) or involve preliminary versions (“pre-prints”). Repositories may either be institutional in nature, for example at an institute of higher education, or be disciplinary/specialist repositories which collect literature from a single area of academic research.
2. Publication in Open Access journals or the publication of monographs in Open Access publishing houses are designated as “Gold Open Access” or “self-publishing”.

Mixed forms such as “Delayed Open Access” have also now emerged. This involves providing Open Access to articles published in journals only after a certain time delay (a so-called “embargo”). So-called hybrid models also exist. Authors are able to pay a fee to make articles published in journals available in accordance with the Open Access principle. However, this means that the publishing house gets paid twice. Firstly, it earns money through the sale of the article in the regular journal and secondly benefits via the pay-off made by the author (so-called “double dipping”). Discussions as to how this double profit may be overcome are taking place within the scope of “offsetting models”. Initial pilot approaches have been launched, for instance in the United Kingdom, the Netherlands and Austria. The objective is to achieve a balance between licence payments for journal subscriptions and Open Access publication fees (APCs). Within this process, it is important to consider the overall value of a journal from the author’s point of view within the framework of a conventional licensing agreement.

Numerous other approaches towards the financing of publication also exist alongside the models described above. These include consortium, member, cooperative and foundation models.

The topic of Open Access thus encompasses a wide variety of stakeholders with different interests:

- ▶ Universities and research institutions
- ▶ Organisations involved in the promotion of academic research
- ▶ Publishing houses
- ▶ Legislators
- ▶ The academic researchers themselves

Perspectives for Open Access

The importance of Open Access has grown steadily within the academic research community over recent years.

As early as 2013 (in a press release dated 21 August 2013), the European Commission arrived at the view that Open Access to research publications was reaching its “tipping point”.

Horizon 2020 (www.horizont2020.de), the EU Framework Programme for Research and Innovation that was launched at the start of 2014, is sending out a clear signal by mandatorily requiring Open Access for all its publications. A press release of 27 May 2016 during the Netherlands EU Presidency announced that the Competitiveness Council had passed a resolution that would make all European scientific articles on the results of publicly funded research work freely accessible by 2020. In order to address this proposal, the Competitiveness Council acted on 17 May 2016 to adopt Draft Council conclusions on the transition towards an Open Science system.

In the press release of 21 August 2013 mentioned above, Máire Geoghegan-Quinn, European Commissioner for Research, Innovation and Science at the time, stated: “These findings underline that Open Access is here to stay. Putting research results in the public sphere makes science better and strengthens our knowledge-based economy.” She referred to several studies which show that around 50 per cent of all scientific publications were available via Open Access at the time. Nevertheless, Gold Open Access seems to be developing considerably more rapidly than Green Open Access. The significance of a large number of established “core journals” remains crucial in numerous academic research disciplines, and important articles are disappearing behind a pay barrier. No final resolution has been found to the issue of financing in particular.

The fundamental question with regard to financing is whether the money currently spent on “normal” journals within the scope of the subscription model can be rededicated in order to finance Gold Open Access publications.

Analyses conducted by the Max Planck Digital Library conclude: “There is currently already enough money in the system. A large-scale transformation from subscription to Open Access publishing is possible without added expense.”

However, the prerequisite for this would be transparent price structuring on the part of the publishing houses. It would still be possible to move beyond this publisher-centred mode of thinking by establishing Open Access platforms which are independent of publishing houses and invest the money that has previously flowed to the latter in such platforms. The fact is

that digital networking is creating an interface between authors and their readership which no longer requires mediation via third parties such as publishing houses.

Of course, the publishing houses continue to favour the Golden Open Access route together with the difficulties posed by high APCs as described. Within this context – financing via APCs and reversal of the conventional financing model (via the readership) – one object of discussion is whether this may lead to a lowering of peer review standards. Naturally, publishing houses will now be interested in publishing as many articles as possible with a view to earning money.

Open Access and the quality of academic research publications

The science correspondent and academic research journalist John Bohannon, who in 2013 offered obviously erroneous articles to peer-reviewed Open Access journals, has become a familiar name within this context. 60 per cent of 304 journals accepted his articles for publication. Nevertheless, members of the Open Access community vehemently pointed out that the absence of quality management was a fundamental problem of the peer review procedure rather than a problem of Open Access publishing per se. Some authors who have looked at the peer review process are of the view that acceptance of a manuscript tends to resemble a random procedure. Notwithstanding this, the dilemma remains. On the one hand, there is pressure on academic researchers to achieve publication and an interest by the publishing houses to publish as many APC-financed articles as possible. This contrasts with the high degree of quality required of specialist academic research articles. The publication pressure for academic researchers appears to be an important factor. The supposition is that a crucial aspect co-determining a career in academic research is quantity of publications rather than merely quality of work. Indeed, the assumption is that the former makes success inevitable. This problem is described by buzzwords such as “publish or perish” or “impact factor fever”. Within the framework of growing competition for financial support and academic positions, there is a need to publish large numbers of results, and positive results in particular, in order to achieve recognition and a post. This means that pressure to publish also increases the probability that erroneous research results will be published, as John Ioannidis was able to show in his 2005 investigation in the medical sector.

There seems, therefore, to be a conflicting relationship between pressure to achieve publication and quality of research. It is likely that quality falls short more frequently than supposed. A critical view should also certainly be taken of the role of the academic research journals, which should actually be the guarantors of quality via the peer review procedure. Is there a tendency to publish interesting results, even if these are not necessarily the right ones? There is at least a higher probability that an article will be published if it contains positive results. Daniele Fanelli from Stanford University, who has looked at these correlations in detail, comes to the following conclusion: “A system that disfavors negative results not only distorts the scientific literature directly, but might also discourage high-risk projects and pressure scientists to fabricate and falsify their data.”

The quality of research results and the monitoring of these results depend on the data used and on the opportunity to gain access to such data. The concept of Open Access and robust further development of the concept of Open Science could help to counter this effect. The process of arriving at academic research findings will also become an expression of social action. Researchers will no longer be sole explorers, but partners who engage in dialogue. This cultural shift brought about by Open Access and Open Science will thus be a direct consequence of the new opportunities for collaborative working that are opening up within the scope of digitalisation.

The aim of the remarks made in this section are to make it clear that the Open Access movement has already brought about an essential change in publication conditions in academic

research and will continue to exert change. Many research results are now freely accessible and are no longer subject to control by the private sector economy. Business models and publication conventions previously established are under increasing pressure of justification.

3. Developments in vocational education and training research in Germany

Whereas comprehensive infrastructures have been created in numerous academic research disciplines in order to foster Open Access, there is still a need for considerable further development in the area of vocational education and training (VET) research. Although the Vocational Education and Training Literature Database (LDBB) published by the Federal Institute for Vocational Education and Training (BIBB) provides the specialist research community with access to an extensive range of texts, the LDBB is a so-called reference database. This means that bibliographical data (author, title, publishing house etc.) and content information (keywords, abstract) are provided and can be searched. References to Open Access publications are made available only via links. However, no permanent archiving of the full texts takes place.

Despite the constant growth in the proportion of online documents referenced via the LDBB, the existing potential offered by Open Access publications is by no means exhausted. Although repositories exist in important disciplines related to VET research, such as pedagogy and the social sciences, these provide inadequate coverage of the thematic field of VET. It would be desirable if this gap in the specialist information sector could prospectively be closed. Specialist publications which are relevant to VET research should be systematically collated in a central place and made accessible. This would also improve the visibility of vocational education and training research.

Open Access at BIBB and in vocational education and training research

Extensive work on the topic of Open Access has been carried out at BIBB since 2010. In March 2011, this led to BIBB's adoption of an Open Access Policy. BIBB signed the Berlin Declaration in 2014 (see <https://openaccess.mpg.de/Berlin-Declaration>).

The Open Access Policy is being implemented, and BIBB publications are largely published in accordance with the principle of Open Access ("Gold Open Access"). Direct links are provided via the BIBB website to publications which are offered as Open Access. References to external publications are also provided via the LDBB. Very few monographs or edited volumes relevant to vocational education and training have thus far been made available by publishing houses via their own Open Access portals.

Repositories

So far, no Open Access repository specifically dedicated to VET research exists. Nevertheless, the German specialist information sector offers three repositories covering important disciplines related to VET research. These are: PEDOCS (educational sciences), SSOAR (social sciences) and EconStor (economics). The ERIC repository (educational sciences) is an example of comparable provision at an international level. However, the content coverage for VET offered by these four repositories tends to be low. This was revealed in October 2016 via an analysis conducted of various content searches (search by keywords) and formal searches (search by relevant authors from within the specialist community, articles in "core journals" and publications by relevant academic researchers). This quantitative analysis began with prior identification of authors with the most publications referenced in the LDBB. This approach offers the following advantage. Only quality-assured articles which pass the relevant criteria

for credible documentation are evaluated for the LDBB and are thus included for research by authors with a high publication output.

The research results showed that the broad spectrum of topics in vocational education and training were not even rudimentally covered. The tendency of many research results in all four repositories approached zero. In overall terms, we can state that there is no German or international Open Access repository which systematically collects specialist publications from the German and international VET community.

Is there a need within the VET community?

As outlined in Section 2, the Open Access publication model is the most recognised model in academic research. It is also the model that is viewed as most desirable in policy terms, even if many challenges are still associated with establishing it on a permanent and efficient basis. Much Open Access publishing is already occurring in VET research. Nevertheless, there is no central place where these publications can be accessed.

In order to explore the need for a specialist repository in the VET community to continue to drive forward the Open Access principle, structured interviews were conducted with several academic researchers from the field of VET research as part of an internal BIBB project carried out in 2013/2014.

Following these interviews and in the light of information strategy considerations, the field of VET research still has plenty of catching up to do in respect of Open Access. Compared to other disciplines, results from the field of VET research are more difficult to locate. A specialist repository for vocational education and training which is well networked with other repositories could bring about a considerable increase in the visibility of VET research across the whole research community. From the point of view of publishing academics, the crucial benefit of a repository would be a substantial simplification and acceleration of the exchange of results.

The above remarks give rise to the following individual desiderata and areas of action:

1. The importance of Open Access in the humanities and social sciences is on the rise. The field of VET research needs to take this development into account.
2. Open Access is the publication model to which research policy aspires. VET research must address this policy development.
3. Action also needs to be taken in light of the constant increase in publications which are only available in digital form. In the field of VET research, these cannot be located in collected form in a single place.
4. There is an urgent necessity to secure reliable and long-term archiving and availability of digital texts. This is not currently happening in the field of vocational education and training research. The risk of inefficiency is therefore greater because research already carried out can no longer be located and may be lost.

4. Research project: Open Access in Vocational Education and Training²

In order to get more information about the author's view on Open Access, the BIBB is planning a research project. Important issues relating to Open Access in VET have not hitherto been an object of systematic research. Because VET research represents an interlinking of various related academic research areas, the assumption must be that responses to these questions will be transferable to other fields of academic research. The research project will therefore be able to deliver further indications and implementation opportunities for the idea of Open Access.

One crucial factor exerting an influence on the acceptance, dissemination and use of Open Access publications could be quality assurance in the Open Access publication model if peer review procedures are dispensed with and reviewers of low repute are used. Against the background of the prevailing pressure to publish which exists in the field of research ("publish or perish"), we need to look at how quality and this publication pressure relate to each other with regard to Open Access and thus constitute the acceptance and usefulness of Open Access. Another question which arises is the significance accorded to Open Access in VET research from the point of view of the academic researchers themselves, particularly with respect to status and career issues.

The empirical database to be used in the planned research project will be created via method triangulation, combining qualitative and quantitative research methods.

Structural group discussions (focus groups) have been selected as a qualitative method since these lend themselves particularly well to the exploration of a topic in which very little previous research has been carried out. The aim is to identify the relevant structural, political and societal conditions governing acceptance, dissemination and use of Open Access in VET research with a view to subjecting these to further empirical investigation within the scope of the quantitative survey.

The plan is to conduct two or three group discussions, each involving between five and eight participants, during the first quarter of 2018.

An online survey will be scheduled for the third quarter of 2019 to serve as a quantitative method. This questionnaire-based survey will be directed at VET research stakeholders, who will be presented with a selection of questions to respond to on the basis of the group discussions. The aim is to establish as broad as possible an empirical basis for identification of the structural, political and societal conditions which exert an effect with regard to acceptance, dissemination and use of Open Access in vocational education and training research.

² The research project was developed by Karin Langenkamp, Kerstin Taufenbach, Meike Weiland and Dr Bodo Rödel.

Matrix of possible traits	Acceptance of Open Access	Dissemination of Open Access	Use of Open Access
Technical/structural conditions	<ul style="list-style-type: none"> ▶ Which structural conditions influence the acceptance of Open Access? ▶ e.g. processes of quality management 	<ul style="list-style-type: none"> ▶ Which structural conditions influence the dissemination of Open Access? ▶ e.g. financing models 	<ul style="list-style-type: none"> ▶ Which structural conditions influence the use of Open Access? ▶ e.g. research options
Political/legal conditions	<ul style="list-style-type: none"> ▶ Which political conditions influence the acceptance of Open Access? ▶ e.g. career opportunities 	<ul style="list-style-type: none"> ▶ Which political conditions influence the dissemination of Open Access? ▶ e.g. copyright law 	<ul style="list-style-type: none"> ▶ Which political conditions influence the use of Open Access? ▶ e.g. funding
Science system	<ul style="list-style-type: none"> ▶ Which social conditions influence the acceptance of Open Access? ▶ e.g. science communication 	<ul style="list-style-type: none"> ▶ Which social conditions influence the dissemination of Open Access? ▶ e.g. new possibilities to communicate 	<ul style="list-style-type: none"> ▶ Which social conditions influence the use of Open Access? ▶ e.g. reputation

Abstract

With regard to access to data and academic results, one important element is open accessibility of academic research publications: Open Access. This specialist Internet article provides a fundamental explanation of the Open Access concept. Furthermore, the developments concerning Open Access in vocational education and training research in Germany are explained.

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