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Open access in vocational education and training research: results from four structured group discussions

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Abstract

Aim: Open Access fosters the exchange of academic research information by making publications free of charge and, wherever possible, available through open licences and without any technical barriers. Although the Open Access publication model is already well established in the natural sciences, there seems to be more resistance towards Open Access in the social sciences, including the field of vocational education and training research. The research project “Open Access in Vocational Education and Training Research” aims to uncover the conditions influencing the acceptance, dissemination and use of Open Access in vocational education and training research. The project is grounded in a sociology of knowledge approach and in media theory. It comprises of two parts. First, four structured group discussions are conducted as focus groups and analysed using a qualitative content analysis. This paper focusses on this first part of the research project, the implementation and analysis of the group discussions as well as the results thereof. The second part of the research project will be based on an online questionnaire built upon these results. The questionnaire will be sent out to authors involved in vocational education and training research in the second part of the research project.

Findings: The analysis of the group discussions reveals several thematic clusters. According to group discussion participants, the scope of their publications as well as transparent quality assurance procedures in publishing are particularly relevant. The reputation of their chosen publication medium is another central aspect. It also becomes clear that in some cases an information deficit regarding the financing of Open Access publications or accompanying licensing models exists. Finally, participants discuss changing literature research strategies and changes of work and reading practices. The latter being clearly discernible in an increasingly digitalised daily work routine of vocational education and training researchers, while academic research communication is also an important topic discussed.

Keywords: Open Access, Vocational education and training (VET), Academic research communication, Group discussions, Qualitative content analysis, Science communication

Introduction–objectives and structure of the research project

The research project “Open Access in Vocational Education and Training Research” aims to uncover the following research question: Which technical and structural, policy-related and normative conditions, as well as conditions inherent in the academic research system influence the acceptance, dissemination and use of Open Access (OA)? The research project approaches this question from the perspective of authors working in the field of vocational education and training (VET) research, thereby uncovering attitudes, opinions and restraint of these researchers, and to derive recommendations. The project also looks into the differing roles authorship and readership of academic publications. Generally, authors are also users of academic research publications, and this means that their interests in these two capacities may diverge.

Since VET research is an interdisciplinary research field, combining different academic disciplines (Sloane 2006, p. 610, Weiß, 2008, p. 79), results of the research project may be partially transferable to the humanities and social sciences. Results will therefore help to provide more insight into OA in these research fields. In turn, habits of related academic research fields within the social sciences and humanities may influence the use and perception of OA in VET research (Taubert 2009, p. 658).

What is Open Access?

There is no standardized concept to describe OA. Within the research project, however, we define OA with regard to three essential aspects:

- a. Access to academic literature is free of charge: Readers do not need to pay for electronic access to academic literature. No usage or licensing fees are charged.

However, since editorial processing is indispensable and causes costs to cover production and layout of manuscripts in the run-up to publication, these costs are usually covered by so-called article processing charges (APCs): The author or institution pays for the article to become an OA publication. Fees in the form of so-called Book Processing Charges (BPCs) are charged in the same way for the publication of monographs.

- b. Licensing is as open as possible: Legal protection of OA publications often takes place through a form of licensing fostering the dissemination of academic literature, rather than by means of copyright law, which—at least in Germany—is highly author-centric. Creative Commons Licences (CC Licences) are one example of such a common licensing model. Licensing likely plays an important role in German VET research and will therefore be taken into account in the research project.
- c. OA publications should be easily findable: OA publications should be easily searchable and accessible, unhindered by technical restrictions. A standardised meta data structure needs to be in place. Repositories and similar infrastructures are needed, in order to store literature permanently. At the same time, access to academic publications should be free from technical obstacles. Documents should be downloadable and come in suitable file formats.

Table 1 Number of refereed and non refereed journals in VET research

	Refereed journals (thereof OA)	Non-refereed journals (thereof OA)
Journals from the core area of VET research	10 (5)	8 (2)
Journals from the broader field of VET research	19 (2)	4 (1)

The publication market in VET research

The subject area of VET research is characterized by its great interdisciplinary diversity. It is therefore a challenge to describe the publication landscape in this field. Linten et al. (2019) differentiate between journals that are dedicated to the core area of VET research and those that address the wider field of the subject area. A distinction can also be made between refereed and non-refereed journals as well as between journals that follow the OA publication model and those that are subscription-based see Table 1.

Established research institutes in VET research also publish their research and work results on OA websites, but this is not always the case. Efforts by publishers to convert their business models into OA are still in their infancy (e.g. the crowdfunding model “wbv OpenLibrary” from wbv Media Verlag).

In related disciplines of VET research, academic repositories make publications available in OA: PEDOCs and ERIC (educational sciences), SSOAR (social sciences) and EconStor (economics). The VET Repository, on the other hand, covers the core areas of VET research. These specialist repositories are used for initial publications in the form of grey literature, but also for secondary publications of articles that have been previously published in subscription journals. Such repositories increase the visibility of specialist literature and make it accessible in one central online space.

A large number of results from VET research are published as journal articles, but monographs are still a common publication format. According to Seifried (cf. 2020, p. 17–18), a trend indicating a decreasing relevance of monographs and an increasing popularity of journal articles can be found in educational sciences. However, this still needs to be proven for the field of vocational education and training research (ibid.). In 2014 Söll, Reinisch & Klusmeyer published research results from a survey on reading and publication behavior among academics from the field of professional and business education. With regard to the academic appointment process and the acquisition of third-party funding for research, subjects, who were all members of the Vocational and Business Education Section of the German Educational Research Association (GERA), assigned the highest ranking in terms of reputation to academic journals. This was also reflected in the perceived high future importance subjects assigned to academic journals (Söll et al. 2014, pp. 511–513). It should be noted, that only members of the section for Vocational and Business Education participated in the survey and that academic journals were distinguished not only from non-academic practical journals, but also from online journals. Accordingly, results indicate a trend towards increased publication activity in academic journals.

In terms of academic reputation in VET research, the same principles as in the natural and engineering sciences cannot be applied. In a study of the publications contained in the German Education Index (*FIS: Fachinformations-System Bildung*), Klusmeyer

et al. (cf. 2011, p. 340) found that almost 95% of the journal articles were written in German. Accordingly, in their follow-up research Söll, Reinisch and Klusmeyer 2014 found that an increase in academic reputation in VET research is not the product of publishing in highly ranked academic journals. In fact, section members ascribed a great deal of importance to journals, which had a peer-review process in place, while the “Impact Factor [...] only received below average attention” (Söll et al. 2014, p. 525). This may be due to the fact that none of the German-language journals of vocational education and training research are ranked in the Social Science Citation Index (SSCI). In the international area of VET research, however, there are ranked journals, such as the *Empirical Research in Vocational Education and Training* (ERVET), *Journal of Vocational Education and Training* (JVET) or the *International Journal for Research in Vocational Education and Training* (IJRVET) (cf. SCImago Journal & Country Rank. Retrieved 2020).

Current state of research and feature space of the research project

The project team examined the current state of research on OA in the German-speaking social sciences thoroughly at the beginning of the research project (Herb 2015, 2017; Bambej 2016, Dallmeier-Tiessen et al. 2011; Pampel 2019 and, for a summary, see Langenkamp et al. 2018, Getz et al. 2019). The analysis of the relevant literature on OA indicates that technical and structural, policy-related and normative as well as conditions inherent in the academic research system may influence the acceptance, dissemination and use of OA.

Technical and structural conditions include factors, such as storage, archiving, distribution and findability of OA publications. Repositories serving as a location for the organised storage of documents are one aspect of these conditions. The financing of OA publications, e.g. through publication funds, represents another aspect.

Policy-related and normative conditions mainly concern legal foundations of OA. These range from Article 5 (1) of the Basic Law of the Federal Republic of Germany and its implications for transparency and the democratic decision-making process, to regulations contained within the Federal Act Governing Access to Information (IFG). They also include the Copyright Act (Rödel 2017, pp. 4 ff., Linten et al. 2019, pp. 9 ff.). Publishing in OA through alternative licensing models, such as Creative Commons Licences, is an additional aspect.

Conditions inherent within the academic research system include quality assurance procedures such as peer review and the academic reputation system. Our assumption is that quality assurance in the OA publication model is a crucial factor for the acceptance, dissemination and use of OA. Against the backdrop of the prevailing pressure to publish in research (“publish or perish”), we need to consider how quality assurance and publication pressure relate to each other with regard to OA.

The matrix below illustrates the possible feature space examined in the research project and summarises possible conditions for the acceptance, dissemination and use of OA. *Acceptance* means that authors understand, approve of and support the OA publication model by publishing in OA. *Dissemination* refers to the various models used for OA publications (e.g. green OA, gold OA). *Use* means that authors use OA publications for their own academic research (even if their opinion on OA is a critical one) (Table 2).

Table 2 RLTW^a Matrix on possible conditions for the acceptance, dissemination and use of Open Access in VET research

Matrix of the possible feature space		Perspective of the authors
	Acceptance of OA	Dissemination of OA
Technical and structural conditions	Which technical and structural conditions influence the acceptance of OA? e.g. proof reading for quality assurance/impact measurement procedures/IT structures of long-term archiving.	Which technical and structural conditions influence the dissemination of OA? e.g. publication and financing models.
Policy-related and normative conditions	Which policy-related and normative conditions influence the acceptance of OA? e.g. support for (IT) infrastructure and academic research career opportunities.	Which policy-related and normative conditions influence the dissemination of OA? e.g. copyright, limitations on copyright, funding conditions.
Conditions inherent within the academic research system	Which conditions inherent within the academic research system influence the acceptance of OA? e.g. structuring of academic research communication/peer review procedures for quality assurance.	Which conditions inherent within the academic research system influence the dissemination of OA? e.g. change to communication opportunities.
		Use of OA
		Which technical and structural conditions influence the possible uses of OA? e.g. access and research opportunities, usefulness, reliability, quality.
		Which policy-related and normative conditions influence the use of OA? e.g. legal certainty via alternative licensing models, financial support.
		Which conditions inherent within the academic research system influence the use of OA? e.g. acceptance of academic research, reputation.

^a The matrix was named after the authors of the 2017 project proposal, i.e. the initial letters of their surnames

Methods—theoretical and methodological approach

The theoretical foundation of the research project is based on a sociology of knowledge and media theory approach, in order to describe and reflect on developments in the field of OA within a broader framework. The project aims to create an increased understanding of the economic relevance of knowledge and academic research and is set to display processes of science communication and publication systems varying across academic disciplines. The project mainly refers to the works of Wilke (1998), who describes the transformation of the work and industrial society into a knowledge society and depicts knowledge as a production factor. Lyotard (2015) describes the value of knowledge as a commodity, meaning that the economisation of knowledge affects the academic research system and the publication and communication structure within (Taubert and Weingart 2016). Alongside the economisation of knowledge, digitalisation also causes a shift in the formal communication of academic research, for which Taubert and Weingart (cf. 2016, p. 5) deem peer review essential, in order to verify research results. Digitalisation has brought about a change in both mass media and academic research communication (cf. Taubert and Weingart 2010, pp. 5 ff.).

Finally, the reciprocity between the academic publication system and the academic reputation system needs to be taken into account (Taubert and Weingart 2010). Given the abundance of academic publications, Luhmann (1971) argues that quality assurance procedures of academic texts need to take place prior to the reading process because readers cannot carry out sufficient quality assurance. Generally, readers trust in quality assurance procedures used in the academic research system, which include the widely acknowledged peer review by reviewers with a high reputation in their respective research discipline. It remains debatable whether these quality assurance procedures serve their desired purpose. In any case, together with the “journal impact factor”, up-and-coming researchers in particular tend to regard them as gatekeepers (for information on this debate, cf. e.g. Rödel 2020; Roberts 2017; Schekman 2013; Callaway 2016; Fanelli 2012; Ioannidis 2005).

Structured group discussions as empirical data

In order to explore the research question, which has been subject to very little investigation in research so far, structured group discussions were carried out in the form of focus groups (cf. Krueger and Casey 2014). In line with the first qualitative part of the research project, group discussions followed a set structure with open questions. This enabled participants to bring their perspectives and experiences into the discussion while ensuring that important aspects were covered.

Four group discussions, each involving five to eight participants, were conducted in the second quarter of 2019. All participants had an academic background in VET research. Participants were of different age groups and genders, and occupied various status levels within the academic system (academic researcher, post doc, lecturer, and professor). This selection of participants ensured room for varying attitudes, preferences, experiences and user behaviours with regard to OA.

Table 3 Influencing factors

Influencing factors	Feature
Knowledge	<p>A low level of knowledge of the OA publication model tends to result in its rejection;</p> <p>Knowledge of OA does not necessarily lead to a positive attitude towards OA. Authors do not publish in OA in the absence of a positive attitude towards OA;</p> <p>The use of OA publications does not necessarily depend on knowledge of OA. Most academic researchers prefer easy access to publications;</p> <p>If authors knew that the OA publication model enabled them to increase the outreach of their research (through citations/better awareness), this would lead to greater acceptance of and participation in the OA publication model;</p> <p>Coverage on predatory journals (cf. Rödel 2018) has damaged the reputation of the OA publication model and led authors to associate OA with “fake science”.</p>
Professional academic culture	<p>Authors working in the humanities and social sciences prefer to publish their research results in traditional print publications, such as monographs and edited volumes^a. Accordingly, the existing academic culture impedes OA because OA business models mostly focus on the publication of journal articles. OA business models for monographs have only been developed since 2018;</p> <p>Authors presumably view a mere digital version of their work as insufficient. For this reason, linking an OA business model for monographs with an optional print-on-demand could increase the acceptance of OA.</p>
Status	<p>Authors who are still building their academic career consider OA to provide fewer opportunities to gain reputation, for example for academic appointment procedures.</p>

^a Unlike an edited volume, a monograph is prepared in its entirety by a single author or by a fixed group of authors and deals comprehensively with a single and delineated topic. In the case of an edited volume, on the other hand, various authors are responsible for individual chapters only. Libraries apply a different meaning to the term monograph. As opposed to multi-volume serial publications and ongoing edited volumes, a monograph refers to a single-volume work in this context (Gantert 2016, pp. 86 ff.)

Prior assumptions and possible hypotheses in preparation for the group discussions

In order to set up a structured guide for the group discussions with suitable questions for participants, the research team compiled a collection of prior assumptions and possible hypotheses divided into (a) *Influencing factors* and (b) *Aspects*. The order of items does not represent an evaluation.

- a. Influencing factors: Influencing factors relate to institutions or individuals and will be part of the second part of the research project as independent variables (Table 3).
- b. Aspects: Aspects describe (framework) conditions for the acceptance, dissemination and use of OA. The table below illustrates the possible features and characteristics of these conditions (Table 4).

The project team operationalised the above-mentioned six aspects and allocated each of them individually to the technical and structural, policy-related and normative, as well as to conditions inherent within the academic research system. This produced six variations of the RLTW Matrix, which visualised the possible feature space and characteristics of the acceptance, use and dissemination of OA. The six matrices served as a basis for the group discussions (Tables 5, 6, 7, 8, 9 and 10).

Table 4 Aspects

Aspects	Feature
Quality assurance... serves the purpose of creating the actual and/or attributed quality of academic research publications. Procedures such as peer review are used for quality assurance. Occasionally, metrics such as impact factors are used for the attribution of quality. Quality assurance also includes the infrastructure through which OA publications become available.	If the OA publication model provides the same quality assurance procedures as conventional publication models (e.g. peer review, impact factor), this will increase the willingness of authors to publish in OA. It is irrelevant whether these procedures actually increase or measure the quality of academic publications. The attribution of quality from within the academic research system matters most; For the same reason, if authors perceive OA publications as being actually or supposedly of inferior quality, they become less willing to publish in OA.
Licensing and legal conditions... relate to licensing models such as Creative Commons and to limitations established by copyright law which support the OA publication model.	Authors tend to be resistant towards the OA publication model because they fear a deprivation of their rights as authors; A better knowledge of OA licensing models and copyright law would increase the authors' willingness to publish in OA.
Financing and (political) support... relate to APCs covered by funding institutions as well as to policy measures, such as requiring institutions to adopt the OA publication model or to develop and implement OA strategies.	OA financing through APCs, which authors are required to cover may lead them to reject the OA publication model; Clear guidelines for the financing of APCs (e.g. through publication funds) would increase the authors' willingness to publish in OA; The lack of business models for OA monographs and of opportunities for financial support have a negative impact on the willingness of authors to publish in OA; OA guidelines/funding guidelines increase the willingness to follow the OA publication model; Some researchers consider an obligation to publish in OA as an intervention into their academic freedom, which may lead to a negative connotation of OA.
Reputation... means the standing of published academic researchers. Their reputation increases, for example, by publishing in recognised journals.	Publications serve to establish a reputation. Academic researchers may assume that OA publications do not establish as much reputation as print publications.
Access and permanent availability... refer to the option of being able to access publications quickly and easily, without technical barriers and in a legally secure way.	Knowledge of access opportunities, and reliable and permanent availability of OA publications increase the willingness to publish in OA and to use OA publications.
Communication and usefulness... mean the exchange of publications and their contents among academic researchers, using modern communication technology/media/platforms within the context of academic research communication.	Authors are not aware that the OA publication model facilitates academic research communication.

Methodological approach to structuring the group discussions

In order to set up a structure for the group discussions, the six matrices above were further compacted. For this purpose, the project team generated three individual matrices for *acceptance*, *dissemination* and *use* respectively. Each of these matrices contained all six aspects, assigned to technical and structural, policy-related and normative conditions, and conditions inherent in the academic research system. Based on the matrices, the project team carried out an evaluation of the individual characteristics of the conditions displayed. This way the project team identified the most relevant topics to be included in the group discussions, assigning points and using a scoring system.

One point = "not particularly important".

Table 5 RLW Matrix on the aspect of quality assurance (QA) as a condition for the acceptance, dissemination and use of OA in VET research

Matrix of the possible feature space	Perspective of the authors		
	Acceptance of OA	Dissemination of OA	Use of OA
Technical and structural conditions	QA through technically and structurally advanced publication platforms (e.g. university repositories); QA through academic proof reading ^a .	Avoiding technical limitations to ensure QA (e.g. use of platform-independent file formats and bibliographical meta data, permanent availability, findability).	Attribution of quality through transparent QA procedures; QA through providing context information (e.g. relating to the author, institution, type of text (project report, dissertation, journal article etc.); QA through the use of software which detects plagiarism.
Policy-related and normative conditions	QA through issuing regulations for good academic research practice (e.g. protection against plagiarisms);QA through OA guidelines.	QA through the use of licences and compliance with copyright.	
Conditions inherent within the academic research system	QA through peer review; QA through application of rules for good academic research practice; The author is involved in OA quality assurance procedures, e.g. as a reviewer.	QA through application of guidelines for good academic research practice.	QA through the publication in a recognised OA publication, by a recognised author, or through another kind of reputation-building factor within the academic research system (e.g. institution/publishing house); QA through the application of guidelines for good academic research practice (citability, protection against plagiarism etc.).

^a Academic proof reading generally means the improvement of a text with regard to spelling, style and grammar. The academic proof reader is usually unable to offer detailed editing of academic content. The proof reader would need to be an expert in the respective discipline in order to carry this out. Content quality assurance takes place through different processes that do not form part of the proof reading process

Two points = “quite important”.

Three points = “very important”.

These points were added up for each feature and rated according to their relevance.

*** = 12, 11, 10 points (very important).

** = 9, 8, 7 points (quite important).

* = 6, 5, 4 points (not particularly important).

For all aspects of the respective matrix, average values for all possible characteristics were calculated.

From each matrix, the three aspects with the highest average values were selected as relevant topics for the group discussion (Table 11).

Table 6 RLTW Matrix on the aspects of licensing and legal conditions as conditions for the acceptance, dissemination and use of OA in VET research

Matrix of the possible feature space		Perspective of the authors	
	Acceptance of OA	Dissemination of OA	Use of OA
Technical and structural conditions	Clear stipulations are in place regarding rights of use or the licensing model, e.g. on publication platforms.	There are licensing models, which are easy to understand and to apply, and simple to implement technically.	Legal regulations on the further use of publications are also readily comprehensible for non-legal specialists.
Policy-related and normative conditions	There are clearly understandable licensing models which are easy to apply; Authors can also allocate simple non-exclusive rights of use.	Funding providers stipulate the dissemination of results through OA (e.g. Horizon 2020 funding programme (cf. European Commission (n.d.)); OA guidelines from institutes of higher education regulate and promote the use and dissemination pathways of OA; Requirement to use licence models exist on the part of the infrastructure provider.	Copyright and limitations on copyright are user friendly and provide legal certainty; University repositories have clear legal guidelines which lay claim to a simple non-exclusive right of use the legal conditions of OA repositories thus make them more attractive to academic researchers, rather than imposing any limitations.
Conditions inherent within the academic research system	Acceptance from the academic research system; Access to results from taxpayer-funded research must be ensured.	Professional academic community favours the dissemination of results through OA and is supported by academic specialist associations; Publishing houses accept content which has already been published and do not demand an exclusive right of use.	Open licensing models facilitate new forms of academic research discourse ("collective knowledge").

Table 7 **RLTW Matrix on the aspects of financing and (political) support as conditions for the acceptance, dissemination and use of OA in VET research**

Matrix of the possible feature space		Perspective of the authors	Acceptance of OA	Dissemination of OA	Use of OA
Technical and structural conditions		Authors know about financing opportunities for OA publications and use publication funds; Authors do not need to pay for publishing their research (cost-free infrastructure).	Publication fund is in place; APC application and settlement processes are available and are communicated to authors.	Financing and support for repositories and appropriate user-friendly infrastructures are in place; Cost-free use of information technology infrastructure.	
Policy-related and normative conditions		OA guidelines exist at federal state level and have been implemented in the form of guidelines at universities; Financial support for OA publications is attainable at little organisational cost.	Research funders stipulate access to financial support for OA publications; Clear and easy to follow regulations on how to publish at institutional level are in place. A support structure for external publications is also in place.	Financing of and support for gold OA, e.g. in the case of publicly funded research projects.	
Conditions inherent within the academic research system		Authors accept the requirement to publish in OA when third party funding is being used; Specialist academic associations issue OA guidelines or else support the idea of OA and may make funding available.	Information on alternative ways of dissemination of academic research findings, e.g. repositories, is communicated to target groups; OA publications within the professional community foster the dissemination of OA.	Business models are transformed, causing funding streams to shift.	

Table 8 RLTW Matrix on the aspect of reputation of authors (Rep) as a condition for the acceptance, dissemination and use of OA in VET research

Matrix of the possible feature space	Perspective of the authors		
	Acceptance of OA	Dissemination of OA	Use of OA
Technical and structural conditions	Promotion of reputation through impact measurement, based on citation databases, e.g. using suitable metrics.	Promotion of reputation through provision of recognised publication possibilities.	Reputation through the use of trustworthy sources which are permanently available (e.g. long-term archiving).
Policy-related and normative conditions	Reputation through academic career advancement, such as scholarships or graduate colleges which promote and support OA; OA publications are taken into account as appointment and recruitment criteria (recruitment policy).	Promotion of reputation through the advancement of OA strategies by research institutes and institutes of higher education.	Reputation through the use of OA publications produced in third party-funded projects; Stakeholders who provide funding require OA publications.
Conditions inherent within the academic research system	Reputation through recognised publishers and reviewers of academic research journals.	Reputation through respected users; Reputation attribution and enhancement through well-known authors.	Reputation attribution through respected authors; Reputation through use of high-ranking journals

In addition to including those three aspects from the three matrices with the highest average values, individual characteristics with an assessment of three stars (***) were also identified as particularly relevant conditions by the project team.

Following this, the project team formulated questions for all chosen characteristics and rephrased them into open questions, structured along the three thematic areas of *use, acceptance* and *dissemination* of OA.¹

In the first part on the *use* of OA, participants were asked about the search criteria they apply when in need of academic literature as readers and to what extent they specifically search for OA publications in this process. Another question focussed on green OA and gold OA and on whether participants know what these terms stand for. Here, we asked how participants handle restricted access to publications prior to the end of the embargo period. The first part closed with a question on whether participants had noticed an increase of the use of OA in their academic communities and what they appreciate about the digital format of OA publications in general. Moving on to the second part of the group discussion on the *acceptance* of OA, we placed an emphasis on the participants' perspectives as authors of academic literature. The guiding questions revolved around participants' priorities and preferences when publishing their own research in the OA format. We also asked them how the appeal of OA could be increased, in order to encourage more researchers to publish in OA. At the end of the second part, we asked participants to elaborate on their view on requirements to publish in OA in the framework of third-party funded research, emphasizing their role as

¹ An overview of the structure and individual questions of the group discussions (in German) can be obtained from the project website: www.bibb.de/oabbf.

Table 9 RLTW Matrix on the aspect of access opportunities (AO) as conditions for the acceptance, dissemination and use of OA in VET research

Matrix of the possible feature space		Perspective of the authors	Acceptance of OA	Dissemination of OA	Use of OA
Technical and structural conditions		Authors design their own OA publication without an institutionally provided technical infrastructure; Author uses repositories or the like for OA publications.		Implementation of AO through financing from APCs; Waiving of Digital Rights Management (DRM); Use of technical formats that are available to all (PDF).	Implementation of AO and research opportunities through permanent availability (e.g. in repositories) Publication possibilities are certified (long-term archive concept is in place), are indexed in search engines and exhibit a high degree of usability (research and publication procedures).
Policy-related and normative conditions		AO through support for the advancement of an (IT) infrastructure; Author uses open licence models whenever possible; Author uses OA publication opportunities and OA funding.		Implementation of AO through the application of copyright law/limitations on copyright.	Financial support, e.g. through cost absorption of APCs of the universities/funding providers; this will make access to publications free of charge for readers.
Conditions inherent within the academic research system		AO are implemented because OA is acknowledged in the academic community; Better participation in the academic discourse through OA and respective AO.		Academic research community is calling for modern AO, because modern AO publications can easily be sent and linked to within the academic community (mailing lists, social media platforms, repositories).	Online access, download, dispatch, linking of OA publications as part of the academic research discourse; Recognition of OA journals etc. by the research community as a prerequisite for providing AO to authors and readers.

Table 10 RLTV Matrix on the aspects of communication and usefulness as conditions for the acceptance, dissemination and use of OA in VET research

Matrix of the possible feature space		Perspective of the authors	
	Acceptance of OA	Dissemination of OA	Use of OA
Technical and structural conditions	Using OA publications is possible in a "simple and straightforward way"; a general recognition of OA is ensured, e.g. with regard to availability of publications and quality assurance; Technical requirements for a discourse among researchers using modern communication technology are in place (including access to and exchange of publications).	Dissemination of OA through social media channels and research networks is technically possible (e.g. with regard to licences, file formats etc).	Simple and permanent access to OA publications is guaranteed technically.
Policy-related and normative conditions	The use of modern communication channels for academic discourse, including access to and exchange of publications, is legal.	OA is stipulated as a standard publication format by funding providers/universities, in order to disseminate research results.	Literature networking opportunities are created, e.g. through virtual research environments or specialist academic information services.
Conditions inherent within the academic research system	OA publications foster academic research careers; Modern communication possibilities are used and recognised in the academic community.	Authors know that they can disseminate their research results much better when publishing in OA; Authors disseminate OA through modern communication possibilities.	Literary reception of OA articles increases; Modern communication technologies facilitate the use of OA from the perspective of authors and of the academic community.

Table 11 Selected topics for the group discussions

Aspect	Topic selection
Acceptance	Reputation; Financing and (political) support; Licensing and legal conditions
Use	Access opportunities; Financing and (political) support; Usefulness and communication
Dissemination	Reputation; Financing and (political) support; Licensing and legal conditions

academic authors. Two main guiding questions structured the final thematic part of the group discussion on the *dissemination* of OA. We asked participants how the dissemination of OA in academia could be advanced in general. Following this, we then asked participants to elaborate on their view on requirements to publish OA within third-party funded research projects, this time emphasizing their role as readers who need access to research results in a timely manner, as opposed to their role as authors.

Group discussions started with a warm-up session, in which participants introduced themselves, and closed with a final brainstorming on OA. While the moderator of the group discussions created sufficient space in the conversation for participants to engage in spontaneous exchanges, she also ensured that the group returned to the set structure on a regular basis. This made possible the comparability of the group discussions, which lasted for about 90 min each.

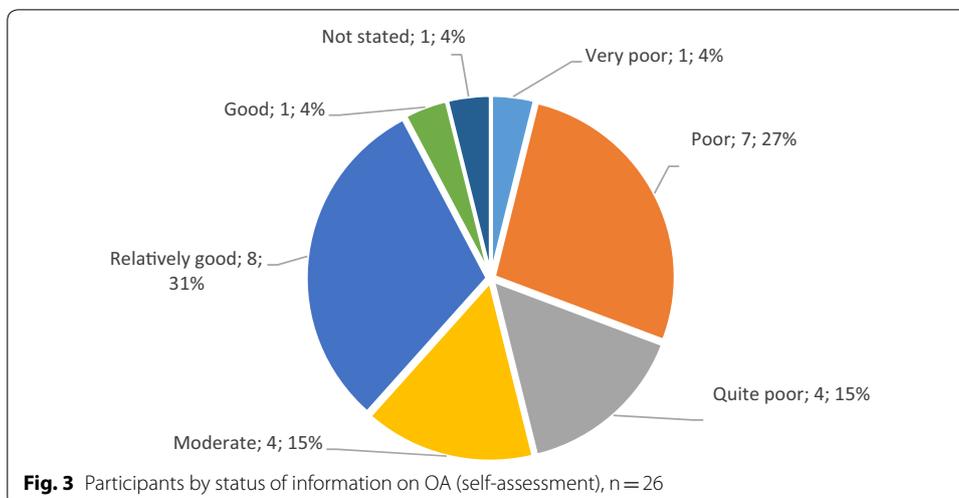
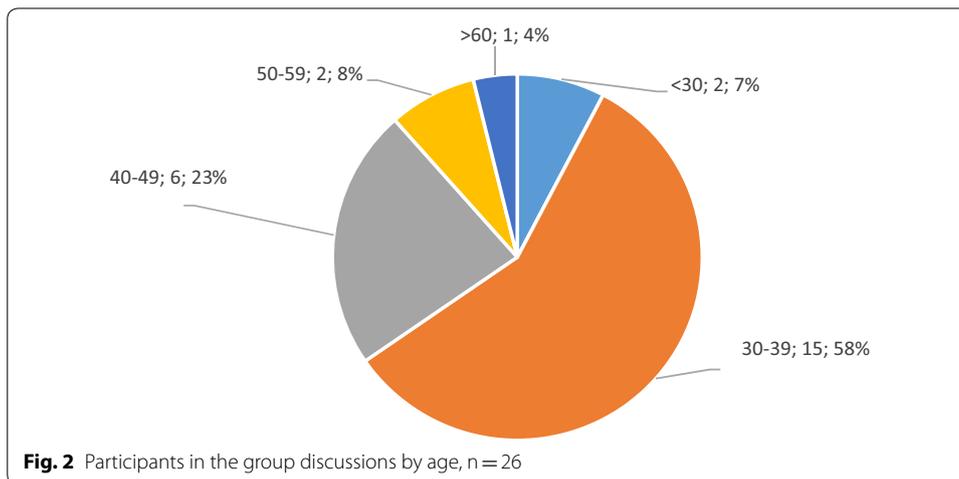
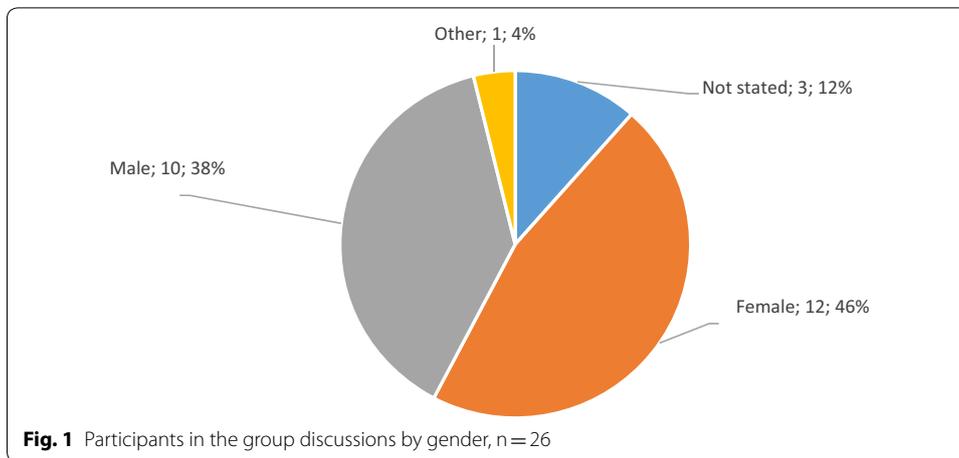
Organisation of the group discussions and selection of participants

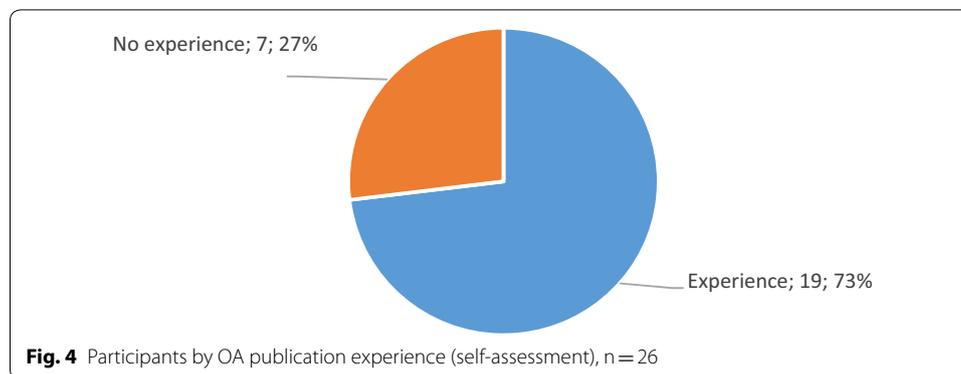
Based on desk research, the project team were able to identify a sufficient number of potential participants at universities and research institutions in Germany. In three locations, professorships and/or research institutes, as well as researchers with a strong focus on VET research, were found. Six to eight researchers at different stages of their academic careers were invited to each group discussion. A trial group discussion was conducted at the Federal Institute for Vocational Education and Training (BIBB) prior to group discussions in Hamburg, Cologne and Paderborn, Germany. Overall, the project team aimed to invite VET researchers, who had already published in OA, came from different professional academic cultures, and represented different status levels, ages and genders, to ensure an even distribution thereof.

The participant acquisition process began in April 2019. Potential participants were initially contacted by telephone and/or received an invitation by email. Participants did not receive any information on the research project except for a link to the project website, a two-page project description and a letter inviting them to the group discussion. Participants were also informed that no preparation for the group discussion would be necessary on their part, since the project team was interested in their personal view on and experiences with OA.

Composition of group discussion participants

See Figs. 1, 2, 3 and 4.





Results and discussion²

The analysis of the group discussions followed the qualitative content analysis by Mayring (2015), complemented with Kuckartz (2018). This approach allowed for the exploration of various thematic areas and layers in the data obtained. In addition, this methodological approach enabled the project team to uncover primary content, as well as latent content through interpretation. Content analysis also permits quantification, for example with regard to the frequency of certain topics brought up by participants. In order to structure the analysis, prominent topics were clustered into the thematic areas described below.

Outreach of publications and addressing target groups

Two initial topics emerge from the analysis of the group discussions: the outreach of publications on the one hand and the targeted addressing of readers on the other. Both these topics concern the participants' point of view as authors and do not concern OA specifically, but rather the publication process as a whole. Participants explain for example that they wish to reach an expert audience that is interested in the topic of their publication. D8 for instance stresses the desire to make publications available to readers respectively: *"It is important for me to actually reach my intended target group."* Participants also state that the way in which they address readers when they publish their research may vary depending on its thematic focus and alignment. In their role as academic authors, participants distinguish between academic research projects and practically oriented projects, as they state this influences their writing style and choice of publication medium. In this regard, D6 reports to adjust the writing style depending on the target audience: *"We write differently when we are [...] writing for a financed public audience [or] when we are writing for the professional academic community."*

Peer review and transparent quality assurance procedures in the VET research community

Participants view quality assurance procedures as an integral part of the academic research system and as deeply rooted in academic culture. From an author's point of view, quality assurance procedures in the publication process are largely described by

² In accordance with the principles of Open Science, the anonymised German transcripts of the group discussions are available for subsequent use on the homepage of the research project: www.bibb.de/oabf.

participants as being indispensable. The peer review process in particular is regarded as a central instrument for quality assurance within the academic publication system in general. Authors also perceive the feedback they receive through peer review processes as particularly useful for their own academic development: “[...] *[through peer review] academic research quality, evidence [...] is being ensured [...] possibly even secured for the first time*” A3 remarks. On the other hand, some participants express a critical view on peer review and state that they would prefer more transparency and comprehensibility when it comes to decisions made by reviewers. D7 points out this perceived lack of transparency in the review process: “*I find that very often there are review procedures in which [...] feedback [...] is not very comprehensible.*”

With regard to the financing of quality assurance procedures, participants reflect critically on the approach adopted by publishing houses not to pay researchers for peer review, may it be for reviewing OA or non-OA publications: “*It is something which is simply seen as part of your job, if you are an academic researcher [...]*,” says C4. In addition to discussing the payment of reviewers critically, participants debate a stronger shift of quality assurance procedures away from large publishing houses and more towards the VET research community, e.g. through an open peer review on online platforms. Participants thus appear to consider the dissemination of OA and the quality assurance thereof partly as a question of financial and human resources.

With regard to OA and based on their trust in institutions and networks of the research community, participants express the wish for the VET research community to look after OA media and platforms, in order to make OA more appealing to researchers and increase the dissemination thereof. Participants state that as both readers and authors of academic publications they appreciate transparent quality assurance provided by the academic community. They wish for trustworthy platforms run by well-known institutions. B4, for example, expresses a desire for “[...] *a sort of network of persons to be organised [and] which would attend to this.*” Accordingly, participants suggest that BIBB should set up an infrastructure to facilitate OA publications for VET research. C3, for instance, can “[...] *well imagine that BIBB actually would be a good place to organise this process of publishing through Open Access [...]*.” Some participants can also imagine uploading literature online without any prior review like in an “*academic research Wikipedia*.” On the other hand, they fear a “*Wikipedia effect*”, as it may lever out systematic review procedures and reliable quality assurance. D1 expresses a certain concern regarding the removal of quality assurance procedures prior to publication: “[...] *if [OA] takes off this way and everyone is able to publish something anywhere [they like], then we will have a Wikipedia effect.*”

Reputation and ranking of publication media, persons, and OA

With regard to their own publishing activity as authors, participants prefer high-ranking publication media that are recognised in the academic community. They express that, from an author’s perspective, it is very important whether a publication is perceived as high-ranking and whether it is actually or presumably held in a certain esteem, as C6 explains: “[...] *it’s important that [journals] have a good reputation, in any case they should be peer reviewed [...] and ideally they have an impact factor, too.*” This is especially true for academic researchers who are at the beginning of their career and who

are building up a reputation. Participants also state that the prestige of a publication medium may also affect the reputation of an author. Concerning the recognition of publication media within the academic community, OA is viewed as lower ranking by some participants and is often associated with “grey literature”, according to D8: “*Open Access still has this slight taste of grey literature [...]*.” Accordingly, authors employ publication strategies to publish in highly ranked and often closed access publications. This approach to publishing in OA appears to be a contradiction to participants’ views on publication practices within third-party funded research, in which it often is a requirement to make research results available through OA. In all of the four group discussions participants state that taxpayer-financed research and results from third party-funded projects must be publicly available. D3 explains for example that taxpayers ought to have access to the research they have ultimately paid for: “*[...] if we are permitted to carry out research using taxpayer funds, [...] then [...] the public has a right to be informed about the results.*” In their capacity as authors who wish to build a reputation in the academic community participants face a conflict when it comes to their own publications. They wish for research results to be publicly available through OA. However, OA is perceived to provide less of a reputation. Therefore, it may be difficult for authors to publish in high-ranking publications enhancing their reputation and to publish in OA in the framework of third-party funded projects at the same time. Consequently, authors tend to prefer conventional and prestigious closed access formats and print publications over OA, even though the latter would be freely accessible to the public.

With regard to gaining an academic reputation, participants explain that they feel there is a need to publish research results as quickly as possible. This need is further amplified by the ubiquitous and immediate access to literature. The pressure to read and publish quickly, which one participant describes as “*fast food*”, is explicitly linked with OA in one of the group discussion. D1 expresses concern over the immediate accessibility of an abundance of literature online: “*I have immediate access, I can take a quick look, I can process things quickly [...] [but] all this time I am wondering [...] how sustainable this really is.*” Participants assume that immediate access to OA may foster a fast and unreflecting consumption of literature. They are concerned that such fast consumption may leave only little room for critical discourses and reflections among academic researchers. Consequently, they fear, the quality of academic literature may suffer from an increasing pressure to publish.

Generally, participants state that the involvement of prestigious authors and publishers, “*certain [...] opinion leaders [...] persons, luminaries [...]*” as A2 puts it, could increase the popularity and dissemination of OA. Participants indicate that OA would be more appreciated, if prestigious individuals were involved in various steps of the publishing process, thereby increasing trust in OA amongst academic researchers. Participants further describe those publication media as prestigious and trustworthy, that have become established in the VET research community.

Literature research strategies and the invisibility of OA

With regard to research and the acquisition of academic research literature, group discussions show that OA is not a selection or search criterion for participants. From the point of view as readers and users of academic literature, other criteria such as access

opportunities (e.g. through libraries), research topics, specific authors and the current validity of a publication are more crucial to participants. In addition, journal subscriptions, which are available to participants through their institutional connections, render the topic of OA invisible when they search for literature. Participants even state that it is often not clear to them whether a publication is OA or not. C7 explains in this regard that institutional access to publications complicates the identification of a resource as OA: *“When I sit at my desk, logged into the university network, I am not aware of whether I can open a certain PDF file because the university has a licence or because the document is Open Access.”* In general, when it comes to literature search, content matters more to participants than the way literature can be accessed.

In case, it is not possible for participants to access academic literature immediately, they resort to alternative strategies for literature retrieval. These may be accessing social media platforms such as ResearchGate and the online platform Google Books, or inter-lending literature through the university library. Participants also state that it is important for them to remain up to date in their academic field through subscriptions to specific newsletters.

Participants mention an increasing flood of information as being one of the drawbacks of the digital availability of literature. However, they do not mention OA as the root cause of this. Instead, they explain that literature research is becoming more complex in general and that they often accumulate documents more or less indiscriminately or may not even read them at all. D8 states to be overwhelmed by the abundance of online article at times: *“Sometimes I am unable to [...] find articles [on my computer] again [...] and then I end up downloading them two or three times.”* One participant compares the research of a certain topic with putting together the pieces of a puzzle. The individual “pieces” of the puzzle are collected by conducting research through various databases and platforms as well as by attending conferences, and networking with other researchers until a topic has been adequately researched, the participant explains.

Since participants are able to obtain closed access literature through their respective institutional affiliations, OA is of secondary importance to them. Instead, the convenient retrieval of literature is what matters most to participants, regardless of whether this concerns their own publications or those of others. An improved availability of digital literature could, for example, be ensured through thematic repositories and stable URLs, as participants state. With regard to the digitalisation of literature, participants discuss the scarcity of digital versions of older literature. When being pressed for time, they tend to choose literature based on immediate online availability, even if this means that some literature will fall through, C2 explains: *“If a text cannot be [...] found online, [...] I no longer take it into account [in my research].”*

Work practices and changes to academic research communication

A recurring topic in the group discussions concerns changing work practices brought about by the digitalisation of literature within the publication system in general. Participants state that they appreciate the immediate availability and flexibility in terms of the location they work from when handling the digital format (of OA and non-OA texts). They also emphasise that digital texts can be conveniently highlighted, cited, and worked with through search and commentary functions. Participants frequently explain

that they highly appreciate working with digital texts and prefer them over printed documents. A1 explains: *“I prefer reading on a screen, on a tablet or on something similar; [the text] just needs to be digitally available.”* The digital format of literature is generally valued by participants because it is convenient to retrieve and easy to handle in everyday working life. This applies to authors, as well as readers of academic literature.

Although a large number of participants perceive working with digital texts to be convenient and up to date, some express a high appreciation for books and reading on paper. They state that printouts are especially convenient on the commute to work or when needing to get an overview over various publications, e.g. in a bookshelf. They particularly highlight the tactile experience of handling paper and a perceived safe space to slow down when reading on paper. D7 explains a deep appreciation for books in this regard: *“There’s just something special about a book, it’s something that really matters to me, reading on paper.”*

Participants also indicate that changes in science communication and digitalised reading and research practices are becoming increasingly important in everyday working life. In addition, remote conference participation is becoming more common, participants explain. In terms of OA in particular, some express a desire to actively participate in the changes that OA brings about and wish to contribute to science communication in the face of digitalisation.

Financing of OA

Participants explain that, as authors they are often unsure how to finance OA publications. Hence, they suggest that OA should be included in research project plans and budgets from the start, in order for employers or third parties to defray APCs. *“Often the decision [to publish in OA] is based on whether the employer will pay for it or not”* A4 explains in this regard. Participants also mention crowdfunding as a possible alternative to conventional financing opportunities for research publications.

Licensing models and legal conditions

Regarding the legal conditions within the publication process, participants frequently state that they do not feel well informed about the various licensing models in OA. This applies to both readers and authors of OA publications and their differing usage of publications. Participants call for the better protection of author rights in the publication process and demand for policy-makers to improve the legal protection of authors in the face of digitalisation.

Conclusions

The analysis of the group discussions shows that OA has become an established topic discussed among VET researchers. However, there may be an information deficit within the VET community regarding individual aspects of OA. Quality assurance is a central issue discussed and participants view OA critically in this context. This is surprising, since quality assurance procedures of journals using the OA model are not fundamentally different to those of non-OA journals. Participants consider peer review to be a crucial aspect of academic quality assurance. Nevertheless, they discuss the framework conditions for reviewers and the transparency of review procedures

rather critically. Some participants even suggest a shift of review procedures from traditional peer review to new forms of an open review and OA infrastructures provided by the VET community. Generally, participants wish to disseminate their research widely and effectively. They aim to reach their respective target audiences by adjusting their writing style and the choice of their publication medium for each publication they work on. Frequently, they mention that results from third-party funded research should be made accessible to the public through OA and that an OA budget should be included in project plans from the start. Nevertheless, they often choose prestigious non-OA journals when disseminating their research. Authors seem to find themselves in conflict between enabling access to their publication and building a reputation at the same time. This ultimately leads to dissonance between the choice to publish or not to publish in OA. Participants' remarks regarding the digital format of literature also stand out. They are critical of the fast pace of digital communication and the steady increase of publications in general, resulting in an abundance of literature that is challenging for researchers to keep track of. Participants wish for a deceleration of reading and work practices, while at the same time they appreciate the flexibility and convenience of working with digital literature. Digital and paper-based work practices seem to complement each other.

In the further course of the research project, the research team will design an online questionnaire based on the analysis of the group discussions. The questionnaire will be sent out to approximately 5000 authors working in VET research in 2020. This will allow for a further exploration of the technical and structural, policy-related and normative conditions, as well as conditions inherent in academic research system influencing the acceptance, use and dissemination of OA in VET research.

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Authors' contributions

LG coding, evaluation, KL Open Access specialist, BR head of project, KT Open Access specialist, MW methodological concept. All authors read and approved the final manuscript.

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The authors declare that they have no competing interests.

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