Saggi e ricerche

Digital Media in Adult and Continuing Education in Germany

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Abstract
Digital media are important elements in the didactic planning and design of provisions and programmes in adult and continuing education. Based on questionnaire and interview data from organizations and umbrella organizations active in adult and continuing education in Germany, the article examines how adult educators use digital media and what reasons they give for using them. The article distinguishes between types of digital media, digital tools, and didactically structured digital media offerings. The analysis shows that educators use digital media in settings combining micro- and macrodidactics. Overall, didactic considerations are shifting more to the macrodidactic planning level, emphasizing the role of organizations and umbrella organizations. This is accompanied by changing demands on cooperation between planning staff and instructors. Moreover, the roles of staff expand and diversify with the use of digital media.

Keywords: Digital media, adult and continuing education, digitalization, media education, digital tools.

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Introduction

Digitalization and mediatization processes in society (Krotz, 2007) raise questions about how digital media may be used in the design of teaching-learning processes in adult and continuing education. The rapid pace at which digital media continue to evolve and become more widely available creates ever new possibilities of using these media in both formal teaching-learning settings and informal learning contexts. The use of media changes the nature of teaching-learning settings in adult and continuing education organizations (Christ et al., 2020, p. 20), calling for modified approaches in teaching methodology and for adult education concepts taking account of the special qualities of digital media (Egetenmeyer et al., 2021).

For decades – and under different names (especially "new media") – the use of digital media has been a widely discussed issue in adult and continuing education (e.g., Baacke et al., 1990; Stang, 2001), including both theoretical discourse and empirical studies (e.g., Hippel, 2007). Recent studies focus on use-related issues and on how adult and continuing education staff rate the effectiveness of digital media in formal teaching-learning settings (e.g., Schmid et al., 2017; Sgier et al., 2018). What is missing in this research is a specific analysis of the reasons that make adult educators want to use digital media in formal teaching-learning settings. At the same time, adult and continuing education research faces the challenge of keeping pace with the rapid developments in digital media and their potential applications in practice – driven, most importantly, by the impact of the Covid-19 pandemic. Particularly after the first lockdown during the Covid-19 pandemic, continuing education programmes in Germany were converted into purely online formats (Christ et al., 2021, 24f.). In these settings, the use of digital media can be assumed to have increased substantially since the summer of 2020.

In this article it is examined what types of digital media are used by staff in adult teaching-learning settings in Germany and what reasons are given for using them. For this purpose, the article starts with a definition following Tulodziecki et al.'s (2021) threefold distinction of digital media (Section 2). The research project "Digitalisation in Adult and Continuing Professional Education" (DigiEB, 2019-2022)[1] has collected questionnaire and interview data on digitalization at adult and continuing education organizations in Germany in two survey rounds (Section 3). Following the above typology and applying the approach of triangulation, data on adult educators' media use is examined, their assessment of the effectiveness of that use, and their underlying didactic reasoning (Section 4). In the final section, the results of the empirical

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[1] More information on this project is available online: go.uniwue.de/digieb.

analyses, connect them to current discourse, and identify points of departure for further research are discussed (Section 5).

"Digital Media" in the context of adult and continuing education

Media are intermediaries "through which potential signs are recorded or produced and processed, transmitted, stored or reproduced or presented and made available in communicative contexts with technical support" (Tulodziecki et al., 2021, p. 33). They exert an influence on individuals and society and must be seen in the "context of the technical, legal, economic, personal, institutional, political and other social-cultural conditions of their production and dissemination" (Tulodziecki et al., 2021, p. 33). Digital media are defined as those media that are based on information and communication technologies. In adult education discourse, they are also called "new media" (e.g., Stang, 2001).

Considering the role of new media in teaching and learning from an empirical perspective, studies trying to demonstrate general effects of digital media often neglect specific characteristics of digital media, the learning process, or other dependent variables (Tulodziecki et al., 2021, p. 33). Accordingly, these studies are of limited value for didactic decisions (ibid). In contrast, evaluation studies, which consider the specific circumstances of the teaching and learning process, show that using digital media can lead to higher motivation and increased cooperation, to self-directed learning or to an advancement of cognitive skills (for an overview, see Herzig, 2014).

The use of digital media in adult and continuing education programmes and offerings must be understood as a didactic issue (Hippel & Freide, 2018, pp. 974-976), which is often raised in connection with teaching methodology (e.g. Weidenmann, 2011). The terms didactic or didactics are frequently used in the German discourse when it comes to the design of learning opportunities. Didactics refers to the considerations, actions and reflections to support learning processes in the best possible way (Hippel et al., 2018). Within didactics, it can be distinguished between microdidactic considerations of media use in the immediate teaching and learning interactions (e.g., Hippel et al., 2018) and macrodidactic perspectives in programme planning (e.g., Fleige et al., 2018). Microdidactics focuses the concrete interactions between teachers and learners. Macrodidactics addresses the design of an organisation's total educational offerings with regard to the organisation's objectives.

Following the typology provided by Tulodziecki et al. (2021), digital media can be distinguished between digital media types, digital tools, and didactically structured digital media offerings. This approach is helpful when analysing

digital media usage with regard to the different didactic levels (see also Grotlüschen, 2018; Koppel, 2021).

Digital media types refer to media as a whole (Tulodziecki et al., 2021), such as computers/laptops or TV sets. Media type thus also includes the hardware used. Aside from computers/laptops and projectors, relevant digital media in adult education settings may include interactive whiteboards, document cameras/visualizers, digital cameras, and, if applicable, screens with smart TV functionalities or mobile devices such as smartphones or tablets. Thus, digital media types are linked to questions of adult education spaces (e.g. Stang et al., 2018) and the equipment installed.

Examples of digital tools include standard software (e.g., presentation software), programming environments, mind mapping or knowledge management tools, and learning and content management systems. Tulodziecki et al. (2021) compare these to analogue tools such as blackboards, flipchart stands, or moderation walls; because the applications are immediately available and are used to prepare content for teaching and learning settings.

Didactically structured digital media offerings have in common that they offer content in a (didactically) structured manner. Tulodziecki et al. (2021) distinguish between teaching programmes, open teaching systems or explorative learning environments, practice programmes, digital textbooks, experimentation and simulation environments, augmented or virtual reality applications (AR, VR), intelligent tutoring systems (ITS), learning games, and videos. This changes the role of instructors (e.g., Schüepp, 2018; Sgier et al., 2018) because the content has already been fully or partially pre-structured for didactic purposes.

Methods

The study presented here is based on data from the research project "Digitalisation in Adult and Continuing Professional Education" (DigiEB). It analyses data from six adult and continuing education organizations and from two associated umbrella organizations in different regions of Germany. The sample includes municipal organizations, denominational organizations, and non-company-based training organizations experienced in using digital media. Data collection in the organizations was divided into a first and a second survey round (see Fig. 1). The aim was to observe how digitalization evolves in the facilities[2].

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[2] For an insight into the overall conception of the research project as well as into the data collected see Egetenmeyer et al. (in process).

Figure 1- Methodology
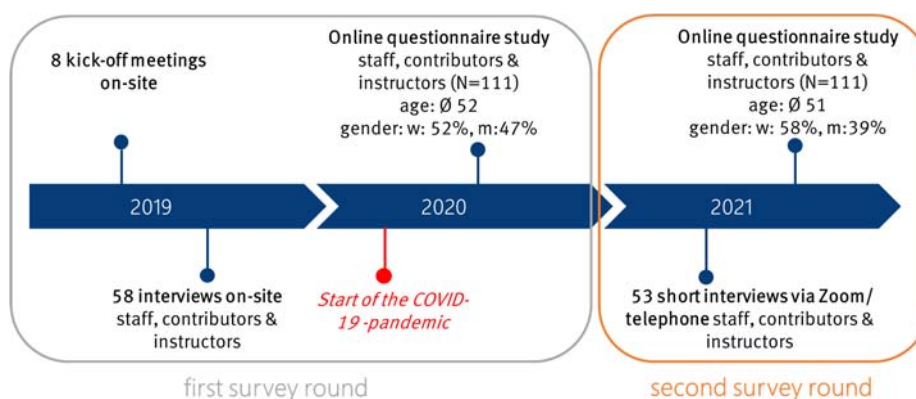
To analyse digital media usage in adult and continuing education, the study draws on questionnaire data from an online survey of the organizations' staff from both survey rounds. For this article, 111 data sets (survey period: September to November 2020) and 424 data sets (survey period: September to November 2021) are analysed on four items[3]. From the more extensive questionnaire, those items are selected that provide information on respondents' media use. The sample size provides initial insight into the situation at the organizations surveyed, but it is not a representative sample. Participants in both the questionnaire study and the interview study can be assumed to be drawn towards digital media. For this article, the following presented items on digital media use are analysed descriptively and statistically (Rasch et al., 2014).

The questionnaire data concerning respondents' reasons for using digital media are supplemented by an analysis of qualitative data from eight kick-off interviews (survey period: March to August 2019) and 58 expert interviews with organizational staff (survey period: September 2019 to February 2020). The second survey round involved 53 short interviews (survey period: March to June 2021).

With regard to profession, the sample includes lecturers (survey period one: 20; survey period two: 17), who often work as freelancers for various organisations, and the organisations' permanent staff (survey period one: 37; survey period two: 38), who are usually more responsible for organisational

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[3] Over the course of the two survey rounds, the qualitative and quantitative survey of instructors, staff, and contributors generated a comprehensive data set. For this article, we analysed 535 data sets. Further information on the total sample can be found in the data manual planned for publication.

and planning tasks. The qualitative data were transcribed and anonymized (Dresing & Pehl, 2018; Meyermann & Porzelt, 2014). The analysis is based on a qualitative content analysis and a deductive-inductive approach following explicit rules of coding (Mayring, 2015; Kuckartz, 2016)[4]. Applying a mixed methods design (Creswell et al., 2003), first the digital media categories in the questionnaire were used (e.g., "videos") to analyse the interview data. In a second step, inductive categories on digital media use from the material were developed. For this purpose, the text passages on digital media use that were assigned to the deductive categories and analysed the reasons given by the staff for using them were revisited.

Digital media usage in adult and continuing education

In the questionnaire survey, 93% of continuing education staff in 2020 and 92% in 2021 report using digital media in their courses. The same applies to the results on the types of courses offered (Fig. 2).

*Figure 2- Types of courses offered in adult and continuing education (multiple answers possible)*

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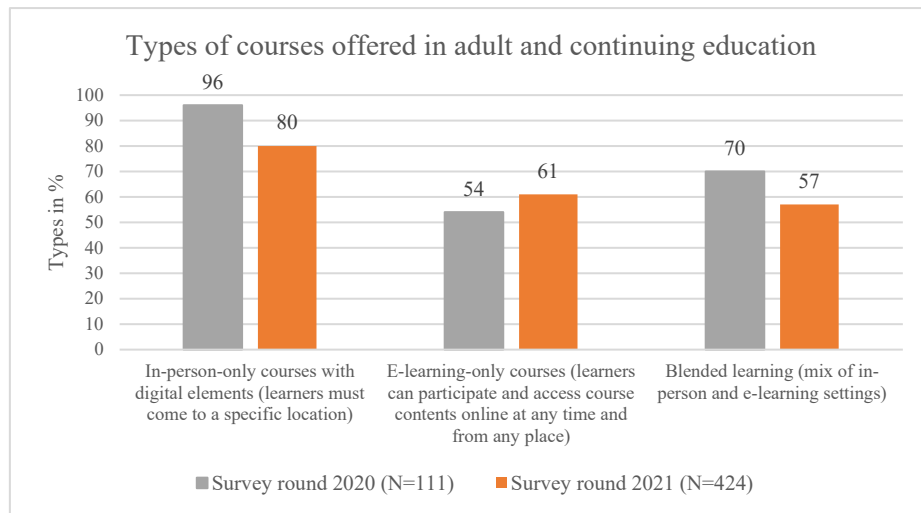
[4] The project's research design is based on a dialogical approach (Gómez et al., 2011; Tulodziecki et al., 2014) which aims to achieve a beneficial interconnection of perspectives from research and practice and to facilitate an in-depth understanding of the research object on all sides.

In 2020, 96% of respondents report offering face-to-face courses as well, suggesting that responses also reflect teaching activities prior to the Covid-19 pandemic. The 2021 results, which are significantly lower (80%), suggest that the restrictions associated with the Covid-19 pandemic led to a drop in face-to-face teaching. For example, the share of online-only courses increased from 2020 (54%) to 2021 (61%). Blended learning formats, by contrast, were used less frequently in 2021 (57%) than in 2020 (70%). This might have to do with the increase of online-only courses during the Covid-19 pandemic, which led to a decline in blended learning courses.

Digital media types

At both survey times, the data reveal that the respondents used a wide range of digital media types. At the same time, clear preferences for some digital media types emerge (Fig. 3).

Figure 3 - Use of digital media types in adult and continuing education courses (multiple answers possible)
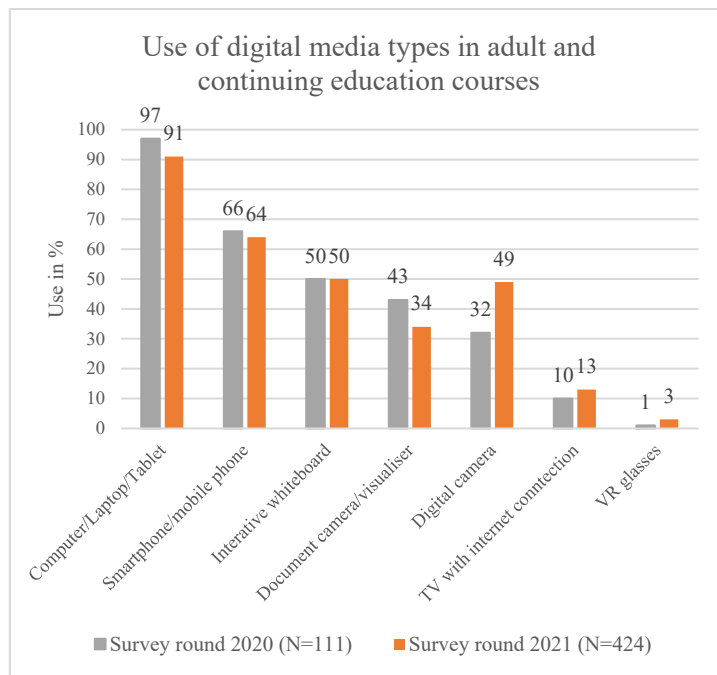
The most frequently used digital media type by far is computers/ laptops/ tablets (2020: 97%; 2021: 91%) and projectors. About two-thirds of respondents use smartphones or mobile phones (2020: 66%; 2021: 64%) in their courses. The high scores in these two categories indicate that familiarity with digital media types in the private sphere is reflected in their professional use. However, there are also some striking changes in the use of digital media types between the two survey rounds. The significant decline in the use of document cameras/visualizers (2020: 43%; 2021: 34%) could be due to a growing shift to online-only settings. Whereas in 2020, the use of digital media types seemed to depend fundamentally on the equipment available on the premises ("depending on what's in the classroom"; G_I5: 8)[5] , on-site technical equipment plays a lesser role in the online-only settings overrepresented in 2021. The issue of equipment rather shifts to the equipment of the digital meeting room. This may also help explain the sharp increase in the use of digital cameras (2020: 32%; 2021: 49%). It is reasonable to assume that digital cameras – both those integrated in mobile devices and those attached externally – were now part of the necessary basic equipment to participate in online settings. Related to this is a growing awareness among continuing education staff of the range of digital media types available and thoughts on how to use them appropriately in teaching settings. Equipping rooms with digital media is not only an issue at organizations but also at the individual level as instructors think about professionalizing their media equipment at home: "Yes, well, I'm also upgrading here. I bought a tablet, and a pen, and some graphic thingy, one after another." (G_I5a: 12).

In addition to equipping rooms with digital media, the organizations face the challenge of training and supporting their staff in using them: "Because if this is supposed to work really well, you also have to train the trainers." (H_I7a: 9).

Digital tools

At both survey times, more than half of respondents used digital tools (Tab. 1). When asked to rate the effectiveness of these digital tools, respondents tended to give high ratings at both dates. Whereas in 2020 the high standard deviations point to a large variance in ratings, in 2021 staff seem to be able to rate the effectiveness of digital tools in a somewhat more focused way across the board.

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[5] The same persons were interviewed in both survey rounds. The first letter (A–H) denotes the organization. The combination of "I" and a number is used to identify the person interviewed at that organization (e.g., "I7"). The lower-case letter "a" marks the second interview date.

Table 1- Digital tools: Usage figures and effectiveness ratings

Digital tools	Use in %		Effectiveness ratings (1=not effective at all to 5 = highly effective)			
	Survey round 2020	Survey round 2021	Survey round 2020		Survey round 2021	
	N = 111	N = 424	N = 111		N = 424	
			M	SD	M	SD
Application software[6]	86	76	4,43	1,1	4,37	0,9
Video conferencing applications	86	83	4,18	1,1	4,32	0,9
Learning and content management systems (LMS/CMS)	82	69	3,88	1,2	4,05	0,9
Online survey	66	63	3,58	1,4	3,86	1,0
Chat programmes	55	51	3,69	1,4	3,64	1,1
Cloud services	49	50	3,69	1,5	3,74	1,1

Interestingly, comparing the 2020 and 2021 figures reveals a striking 10% decrease in the use of application software although the effectiveness rating remains constant (2020: M = 4.43; 2021: M = 4.37). Whereas interviewees in the first survey mainly refer to presentation software as a basic digital tool ("we simply use PowerPoint"; B_I6: 28), the primary focus on application software seems to decrease somewhat at the second survey time. Application software does not become obsolete, but rather than being the main tool it is now one option for designing teaching-learning settings alongside a variety of other digital tools: "[...] now there is Zoom. But the way it is now, you need additional tools for it. It's not enough to have PowerPoint, I also need a tool for collaboration. I don't know, Padlet, or something else." (H_I3a_DO: 55)

The high usage scores and effectiveness ratings for video conferencing apps (2020: 86%, M = 4.18; 2021: 83%, M = 4.32) must be read against the background of the developments starting with the Covid-19 pandemic. Prior to the pandemic, respondents used videoconferencing apps primarily as part of individual pilot projects (e.g., online-only or hybrid courses). At the time of the second interview survey, they were proficient in a range of different

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[6] To help respondents understand what is meant by each category, the questionnaire included examples (e.g., PowerPoint, Excel, Trello).

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videoconferencing systems (E_I2a: 18), knew of their respective advantages and disadvantages (e.g., C_I7a: 52; C_I12a: 12; G_I1a: 10), and made more extensive use of the additional functionalities provided by the platforms (e.g., breakout sessions, chat functions, integrated apps):

> And so now we already work with group rooms, these breakout rooms. [...] I also see that with my trainers now. They more often use screensharing, additional apps, additional whiteboards that maybe offer more functions than the standard ones in virtual classrooms. (H_I2a: 14)

A sharp decline in usage among respondents is also evident for learning and content management systems (LMS/CMS) provided by continuing education organizations (2020: 82%; 2021: 69%). Their effectiveness ratings went up, however (2020: M = 3.88; 2021: M = 4.05). On the one hand, this might indicate that staff in 2021 were better able to choose and use LMS/CMS more appropriately for their own purposes than they were in 2020. The interview data show that LMS/CMS are used to support the teaching-learning process in asynchronous phases as well. Adult and continuing education staff see a wide range of possible applications, for instance as a knowledge documentation tool, as a place for exchanges with and among participants, or as information sharing platforms (e.g., F_I1: 25; C_I2a: 13; C_I13a: 44; H_I6a: 8). Usability is cited as the most important reason for or against using LMS/CMS: respondents state that using learning and content management systems makes sense if they are intuitive and easy to use.

Whereas the questionnaire only asked about online survey tools, the interviews of 2019/2020 show the use of additional online tools in a few isolated cases among respondents with a special interest in media education (e.g., E_I3: 12-13); in 2021, use of additional online tools was reported much more broadly. These tools are used to create quizzes, virtual bulletin boards, virtual surveys, learning modules, or project management workflows. Looking at both survey rounds, online tools are named primarily in connection with online offerings and less in connection with face-to-face offerings.

Chat apps (2020: 55%; 2021: 51%) and cloud computing services (2020: 49%; 2021: 50%) were used for classroom purposes by roughly half of the adult and continuing education staff at both survey times. The respective effectiveness ratings turn out to be relatively mediocre (2020: M = 3.69 & 3.69; 2021: M = 3.64 & 3.74), with an initially broad and then adequate standard deviation (2020: SD = 1.4 & 1.5; 2021: SD = 1.1 & 1.1). Supplementary analysis of the interview data shows that communicating via chat apps serves as an alternative to in-house organizational learning and communication platforms as a quick and easy way to manage organizational aspects of course delivery: "Organizing a course is easier, of course, if you have a WhatsApp

group." (B_I10: 112). To comply with data protection regulations, chat apps are mainly used indirectly, with participants rather than staff using them on their own initiative as a quick communication tool. This may also explain the relatively high standard deviation in the effectiveness ratings. At the same time, however, it can be seen that some staff are critical of commercial chat apps for data protection reasons (e.g., H_I2: 15; G_I3: 32).

Didactically structured digital media offerings

Concerning the use of didactically structured digital media offerings, a greater variety and clear differences in the effectiveness ratings at both survey times can be seen (see Fig. 4)[7]. Whereas the 2020 data still show strong variation in respondents' assessment of the benefits of individual digital media offerings, the connection between usage and effectiveness ratings becomes clear in 2021. In both, the 2020 and 2021 data, educators give higher effectiveness ratings to those digital media offerings that they have used more frequently. Media offerings used by only a few respondents receive lower ratings. This may indicate that certain media offerings, such as experimentation and simulation environments or intelligent tutorial systems (ITS), are less frequently available in the organizations. This would mean that necessary general prerequisites for piloting and building up experience are lacking.

Overall, it is apparent that adult educators mainly use those media offerings that are already fully developed and can be easily used in the classroom. These include videos, which are used in the classroom by a high share of respondents (2020: 81%; 2021: 78%) and whose effectiveness is rated as very high (2020: M = 4.2, SD = 1.0; 2021: M = 3.98, SD = 0.9). Supplementary analysis of the interview material shows that fully produced videos (e.g., on platforms such as YouTube) are readily used in course settings given their easy availability, and because it does not matter how the course is delivered (online only, face-to-face, or blended/hybrid):

> Showing films, for example, is something I can do quite well. [...] In the past, people used to sit together in the same room, watched the film and then talked about it. Now that is done digitally. And it works, too. (C_I8a: 16)

It is less common for videos to be specifically designed for teaching purposes and then made available as a digital medium to be used in the classroom. Creating such videos involves prior didactic planning of the course

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[7] To help respondents understand what is meant by each category, the questionnaire included examples (e.g., YouTube, Media Library).

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setting, for example, on how to guide and support participants during asynchronous phases of self-directed learning, as illustrated by the following example: "blended learning, then of course we have videos [...] that are specifically adapted to this. [...] available for them as a resource if they want to go deeper [...]." (H_I5: 21)

Figure 4 - Use of digital media offers in seminars and effectiveness ratings of the use of digital media offers in seminars
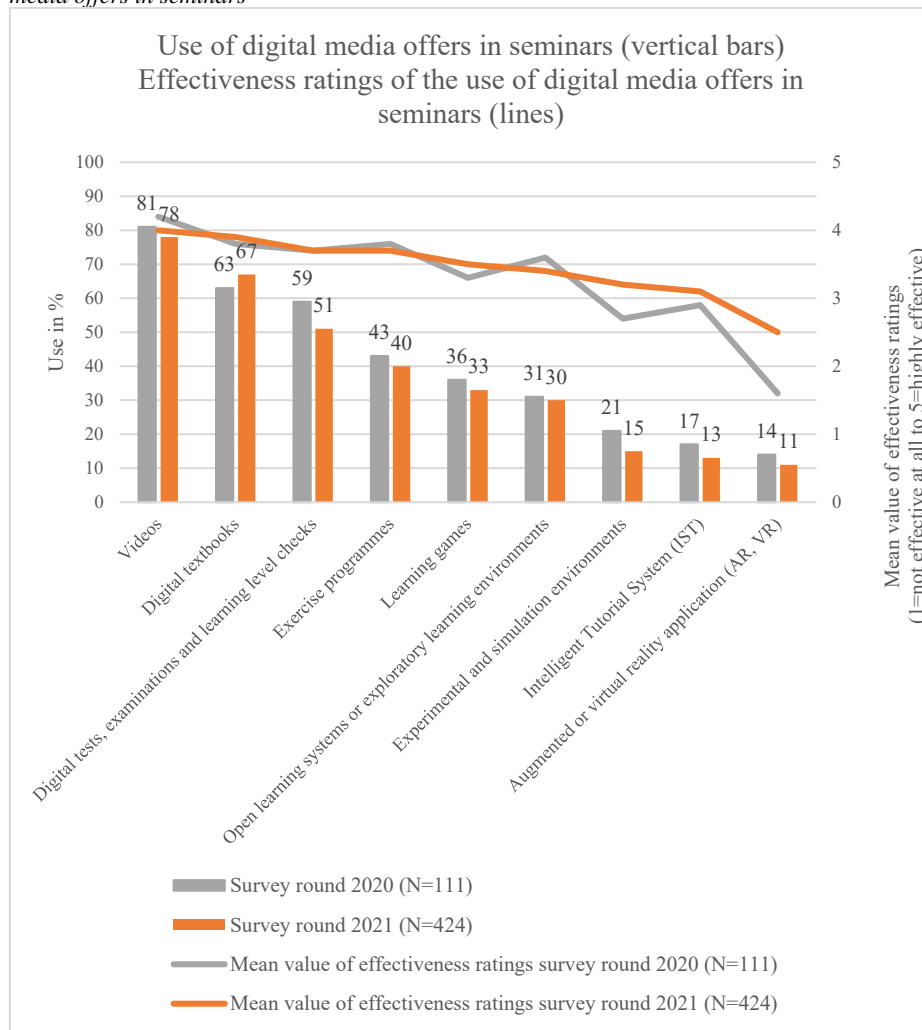
Two-thirds of staff interviewed used digital textbooks provided to them, with a slight increase in usage rates (2020: 63%; 2021: 67%) and in

effectiveness ratings (2020: M = 3.77; 2021: M = 3.92). The interviews show that whether or not instructors use digital textbooks depends, among other things, on their being available at the organization or on their being purchased via umbrella organizations or external providers, such as publishers (e.g., B_I2: 4; F_I6: 48).

For all other digital media offerings, there is a decline in usage by the second survey round. This is also reflected in the interviews, in which respondents talk less about more complex media offerings. One possible explanation for this might be the nationwide switch to online settings, which forced organizations and staff to devote most of their attention to this effort and to concentrate many resources on creating the necessary infrastructures, installing the required hardware, and developing suitable teaching concepts.

A more detailed look at practice programmes enabling learners to practice and consolidate learning content shows that 43% (2020) and 40% (2021) of respondents use them in their courses. In 2021, around half of the respondents (51%) still used digital tests, examinations, and learning progress assessments in their courses. The use of digital tests, particularly in continuing vocational training, is closely linked to the curricular structures of the specific training programme for which they are developed (e.g., G_GD: 21). Moreover, they are used when they are provided by the organizations. Usually these are practice programmes for learners to use on their own.

Digital learning games (2020: 36%; 2021: 33%) and open teaching systems or explorative learning environments and teaching programmes (2020: 31%; 2021: 30%) are used less frequently by respondents[8]. One respondent talks about an open learning environment elaborately created by the organization (F_GD: 28). This indicates that the organization must provide extensive resources for its development. At the same time, such learning environments change the role of teachers: the content and suitable teaching approaches have already been prepared by the organization, leaving teachers to serve more as facilitators supporting the learning process.

The questionnaire data show less usage of experimental and simulation environments (2020: 21%; 2021: 15%), intelligent tutorial systems (ITS) (2020: 17%; 2021: 13%), which adapt to learners' knowledge and skills, and augmented or virtual reality applications (AR, VR) (2020: 14%; 2021: 11%). This suggests there are hardly any offerings available for use in adult education settings and that developing such offerings is considered to be very time-consuming. Again, we see that educators tend to use media that are already fully

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[8] Open teaching systems or explorative learning environments provide content in a hypermedia format and in a manner suitable for teaching. Teaching programmes also offer didactic guidance to help learners navigate the learning process.

developed and can be used quickly and easily. Development and usage require extensive time and financial resources; moreover, the organization must provide the necessary infrastructure.

Digitalized data repositories as another type

Based on our analysis of the interview material, the original typology of digital media can be expanded to include the area of digitalized data repositories. These include, for example, digital legal texts, subject-specific databases, digital translation tools, vocabulary databases, or platforms providing video material on various topics. These data repositories, which are available online for the most part, are used by staff to prepare and conduct teaching-learning settings. This type of digital material is not specifically prepared to be used for teaching; rather, instructors use it based on their didactic planning and implementation of teaching-learning settings.

Conclusion

Breaking digital media down into digital media types, digital tools, and didactically structured digital media offerings provides a detailed insight into how digital media are used by adult and continuing education staff. With respect to media types, one the one hand, their usage is a macrodidactic question of room planning and media availability linked to the framework conditions in the organizations. On the other hand, the shift of teaching-learning settings into digital space means that questions of media usage are increasingly individualized, with individual instructors incorporating microdidactic considerations into their work. The strongest development is evident in the use of digital tools. Adult educators can become familiar with a wide range of digital tools and they are quickly and directly available, as well as easy to use. Adult education organizations and umbrella organizations have resolved licensing issues and established the digital infrastructure (e.g., hardware, bandwidth, power supply) and provide a stable and reliable framework for implementation. To some extent, this is also true of didactically structured digital media offerings. The latter often involve an elaborate development process or require costly licenses. It can be assumed that efforts in this direction have been put on hold at many organizations given the challenging situation of the past two years. The addition of a fourth type – digital data repositories – points to current and future dynamics and trends in the use of digital media. In summary, it is possible to draw some conclusions that are likely to be relevant to the use of digital media in adult and continuing education.

Key role of organizations and umbrella organizations in making digital media available

It is important to emphasize the key role of organizations and umbrella organizations. They play a major role in purchasing digital media and making them available for use (e.g., hardware, development of more comprehensive concepts, licenses for using tools). In this effort, they must engage in macrodidactic-level reflections not only about content planning but also about marketing their own educational programmes, for instance via social media (Grotlüschen, 2018). This perspective also includes recruiting, hiring, and professionalizing staff. The results suggest that it is not enough to just make digital media available; staff and instructors must be taught how to use them, for instance through suitable staff development measures and training programmes (Breitschwerdt & Egetenmeyer, 2021). Likewise, it is crucial to provide informal opportunities to try out digital media in the facility. The interview material points to the need for an organizational culture that is supportive and open in dealing with uncertainties in the use of digital media to motivate staff. In summary this illustrates, on the one hand, the value of focusing more on organizations in research, for instance regarding a culture conducive to digitalization. On the other hand, it reveals essential aspects for the organization themselves that appear relevant for digitization-related organizational development, such as personnel development that enables both formal and informal opportunities for professionalization. With regard to the umbrella organizations, the results also point to their importance in creating structures in negotiation with political actors, for instance concerning funding and the legal framework of digital media use.

Distinction between micro- and macrodidactic considerations

Overall, the results show that digital media are already widely used in the organizations surveyed. At the same time, this clearly changes the role of the organizations. Aside from shifting the content-related and didactic management of programmes and offerings involving digital media to the macrodidactic level, this affects organizational and staff development processes that address these digitalization-related changes and establish an organizational culture that leads to a joint development of adequate concepts of digital media usage. This clearly illustrates that using digital media requires didactic considerations at the macrodidactic planning level (Fleige et al., 2018; Fleige et al., 2018; Hippel et al., 2018). A framework must be established at the organizational level to address questions about equipping rooms with digital media types (e.g., interactive whiteboards), making digital tools available (e.g.,

videoconferencing apps, learning and content management systems), and establishing didactically structured digital media offerings (e.g., digital textbooks, open teaching systems). Developing more complex media offerings requires cooperation with the instructors to create a didactically meaningful framework for using digital media. This calls for establishing basic collaborative strategies between teaching and planning staff. More detailed research is needed, especially regarding the planning staff, who will in the future be increasingly involved in didactic questions in the planning phase.

Changing staff roles

The use of digital media changes not only the requirements for the didactic actions of staff involved in programme planning but also the role of instructors, who increasingly become learning facilitators supporting teaching-learning processes (e.g., Schüepp, 2018; Sgier et al., 2018). Furthermore, new roles are emerging that are responsible for providing technical support to teaching-learning settings, for example (e.g., Zierock, 2016). The challenge here is that these new roles are not necessarily performed by additional staff, but rather become an additional responsibility of instructors themselves. Organizations provide a media framework in terms of digital media, which is not only provided for the participants but also guides the didactic options of the instructors. In the future, adult education will have to deal with how to address the demands on teaching and learning settings, which are becoming more complex with the increasing use of digital media. This raises basic didactical questions, including ways of implementing these didactic concerns in the organisational culture, for example, how to involve and support participants in their media use or how to facilitate cooperation between different actors (e.g., facilitator, technical support, etc.) around the design of teaching and learning settings.

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