Chapter 3
Computer Literacy Among the Generations: How Can Older Adults Participate in Digital Society?

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Introduction

The ability to participate in society is considered a central aim of every educational process in the memorandum, and lifelong learning is seen as a way "*to encourage and equip people to participate more actively once more in all spheres of modern public life, especially in social and political life at all levels of the community, including at European level*" (European Commission 2000, p. 5). Looking at contemporary ways of participating in modern societies, knowing how to deal with digital media, especially the computer and the Internet, constitutes a crucial and basic educational content. Digital media play a crucial role not only in accessing information but also in communication in the private, the commercial, and the political sector. Furthermore, the fact that many services – such as counseling, banking, or administrative processes – are increasingly handled via Internet has a significant impact on older people's lives. For people who do not have access to a computer or to the Internet, this development implies that they are excluded from a steadily growing sector of social life. Active participation in social life and societal processes is thus significantly limited, which is why the acquisition of just this ability to participate is formulated as one of the foremost aims of media-pedagogical approaches (Hurrelmann 2002).

Digital media thus constitute a significant content of education and learning processes in every phase of life. At the same time, these media – the Internet, in particular – provide rich resources for learning processes and thus offer the possibility to support informal learning which can take place independent of institutional

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infrastructures within the educational system. Thus, modern information and communication technologies on the one hand offer the chance to make up for infrastructural disadvantages, when access to services and information does no longer depend on local facilities; on the other hand, structures of inequality may well be (re-)produced through the medial infrastructure. The more important it is to have access to digital media for social participation and individual learning opportunities, the more problematic it becomes if entire groups of the population are excluded from this use of digital media (Remtulla 2010, p. 309).

Computer Competence, Digital Divide, and Participation

Participation is an elementary component of civil society. Accordingly participation is formulated as a central goal of European policy, as mentioned above. The memorandum also points on the revolutionary meaning of digital media for knowledge societies (European Commission 2000, p. 7) and consequently claims IT skills as one of the necessary basic skills for people in Europe (ibid. p. 10). We can observe an increasing transfer of information processing, opinion making, and also learning resources into digital worlds. This means the exclusion of people who don't have access to the Internet in many central parts of civil life and informational resources. Looking at this, it seems only consequent, to make demands on fostering IT skills for all. Nevertheless, in same way the question could be posed, if it is necessary or beneficiary to bound participation in many fields exclusively to digital media (e.g., evaluation of political ideas or products but also processes of daily living like ticket sale). On the one hand, it can be criticized that many parts of daily life and civil society depend more and more on the use of digital media; on the other hand, it can be argued, developing IT skills in all social groups and generations is the only way to cope with this irreversible development.

In current reality this trend means exclusion of parts of the population from more and more important societal resources, named with the catchword "digital divide" (Warschauer 2004). The divide between people with and people without access to the Internet can essentially be discussed related to three aspects:

Firstly, on the global level, strong disparities between North and South are discernible. While large parts of the population of the rich and mostly industrialized northern hemisphere have been provided with Internet access, large parts of the population of the economically less developed countries of the southern hemisphere remain excluded from participation in the World Wide Web (Warschauer 2004).

Secondly, in modern industrial societies another form of the "digital divide" within society becomes apparent. Not so much the possibility to access digital media, but rather the competence to use these media is unequally distributed among the different social strata and milieus. While the number of users suggests a quite thorough distribution of computer and Internet throughout all social milieus, the ways in which these media are used differ significantly. For instance, some social groups focus more on informational aspects of media while others prefer to use the same media for entertainment (Pietraß et al. 2005).

Thirdly, there runs a digital divide between different generations – if diverse studies on the use of digital media are reliable. Those born after 1980 grew up with modern digital media; they use these media with great routine and naturalness due to their medial socialization and are therefore also referred to as "digital natives" (Trinder et al. 2008). In contrast, older adults, in particular, especially those born before 1950, seem to be less familiar with the use of digital media (Hargittai 2002). At least, the number of individuals not using the computer and the Internet is (still) much higher among those older than 60 than among the younger age groups (Jones and Fox 2009). This is due, on the one hand, to different socialization experiences and, on the other hand, to habitualized media practices determined by the use of media during adolescence. Following Karl Mannheim's considerations on generational location and on "generations in actuality" (Mannheim 1928), media experiences in adolescence can be expected as crucial for media use during the lifetime. It can be assumed that those media which played a crucial role during adolescence as well as the respective patterns of media use will remain defining during the later phases of a person's life. This assumption was further substantiated through empirical studies (Schäffer 2003). Looking at the aims formulated in the memorandum (strengthening social participation and developing ICT skills), it has to be seen as a great challenge not to exclude older people when information and participation is more and more based on digital media.

Cultures of media practice specific to certain generations do not only have an impact on the way media are dealt with or on the attitude toward media. These cultures also correspond with the development of knowledge and competencies regarding the handling of media. Knowledge about media and the ability to employ them effectively can be considered essential prerequisites for media use and are closely linked with the terms "media competence" and "media literacy" or – when referring to digital media – "computer literacy". Although these three central terms are sometimes used as synonyms, different definitions apply to each.

Media competence is a term well established in European media pedagogy, in the German literature, in particular. According to the concept evolved by Baacke (1996), media competence comprises four fields:

- Media knowledge refers to basic information and knowledge about media and media formats.
- Media use emphasizes more strongly the knowledge concerning the application of media. The focus is on enabling people to choose and use appropriate media.
- Media design is, according to Baacke (1996), the ability to actively partake in the design and production of medial contents. Nowadays, at times of an interactive use of the Internet, media design is turning into a mass phenomenon and, thus, is becoming a fundamental competency requirement in modern societies (Pikalek 2010, p. 151).
- Media critique comprises the skill to critically question medial contents and their design, to recognize inherent manipulation strategies and manipulative intentions, and to be aware of the influence of media on the social level (Remtulla 2010). Empirical findings indicate that this ability to remain critical is more pronounced among older adults than among the younger ones (Eshet-Alkalai and Chajut 2010).

As a counterpart to the term competency, the concept of literacy is used above all in American and internationally determined educational research; this term originally referred to the skill to read and understand texts. In a broader sense, *media literacy* refers to "people's ability to access and process information from a form of transition" (Potter 2011, p. 12). Thus, the concept of media literacy is not limited to a certain medium but rather comprises almost all forms of medial presentation, although most of the scientific discourses focus on mass media. From a cognitive-psychological perspective, Potter (2011) argues that habituated attentional processes, individual knowledge and the ability to deal with media are central components of media literacy.

Computer literacy, on the other hand, refers exclusively to computer and Internet applications and is therefore much easier to grasp empirically. Computer literacy comprises the use of programs and applications in solving well-structured problems (Bers 2010). Furthermore, there are indications that the development of computer software (in the sense of media design, see above) may also promote meta-cognitive competencies (Papert 1980).

Learning and Media Competency in Old Age: The Research Projects CiLL and IGeL-Media

In the context of lifelong learning and the EU memorandum, which points on the meaning of ICT skills in every age and for every social group, some central questions related to ICT use in higher age become significant. Looking at media use, what differences between age groups and generations can be found? Is the ability to develop media competence related to age? What are motives and barriers for older adults to deal with digital media? To what extent is intergenerational learning a meaningful way of developing media competence in higher age? All these questions are addressed by different research projects, which will be presented briefly in the following passages.

With regard to adults, the digital literacy model proposed by Eshet-Alkalai (2004), which also takes into consideration socio-emotional aspects, provides a differentiated alternative to the concept of computer literacy. Empirical studies revealed that younger computer users could better orientate themselves in multimedia environments and were faster in grasping graphically processed contents than older users; however, these differences are clearly reduced after several years of computer use. In contrast, older computer users showed a much higher performance with regard to critical reflection and creative (re)organization of multimedia presentations. The gap between the age groups related to these aspects of digital literacy actually increased with the growing experience in dealing with the computer in all age groups (Eshet-Alkalai and Chajut 2010). The authors consider these findings a clear proof of the ability to build up or broaden digital literacy in old age.

The results of the abovementioned study are thus consistent with gerontological and cognitive-psychological studies on the ability to learn during old age.

It is by now beyond dispute that the ability to learn is not primarily a question of age but rather can be maintained well into old age (Kruse and Schmitt 2000; Schaie 2005). A prerequisite for this is that one never grows out of the habit of learning and that the mental performance is practiced through cognitive activation (Saczynski et al. 2002). Forms of learning and learning preferences change with age; however, these developments differ considerably from one individual to the other. They are determined, e.g., by biographical experiences and the current life situation (Strobel et al. 2011), and it is due to these diverse developments that older adults are an extremely heterogeneous target group for adult education (Schmidt 2010a, b).

This heterogeneity is reflected in the interest in dealing with digital media and in the ways in which older adults choose to approach these media. The further development of one's computer literacy can be targeted or rather casual. The motivational basis for learning processes then results from an actual challenge to act (e.g., the necessity to solve a problem) or from a merely intrinsic interest (e.g., being curios on new IKT). Computer literacy may be obtained in organized courses or through informal channels, alone or together with friends or family members. These different ways of learning and learning motives, learning opportunities, and situations as well as the significance of computer literacy for older adults in everyday life are the subject of several studies presently carried out in Germany. In this contribution, results from two ongoing research projects – "Competencies in Later Life (CiLL)" and "Informal Intergenerational Learning for Media Competence (IGeL-Media)" – will be presented.

One of the components of the CiLL project is an extension of the national PIAAC survey carried out in Germany. Within the framework of PIAAC, the Program for International Assessment of Adult Competencies of the OECD, the competencies of 19–65-year-old adults in three different fields are surveyed through standardized tests: literacy, numeracy, and problem solving in a technology-rich environment (Schleicher 2008). The last mentioned field of competency – problem solving in a technology-rich environment – essentially refers to the skill to solve everyday problems with the use of the computer or the Internet. Thus, the underlying competency construct is closely linked to the concept of computer literacy or digital literacy (OECD 2009). In the CiLL project, the abovementioned fields of competency are surveyed among the group of 66–80-year-old adults in Germany by using the same instruments. The competency tests, which are still being prepared, are supplemented by qualitative data, some of which has already been collected. These qualitative case studies primarily aim at clarifying in what way the competencies surveyed are relevant to older people's ability to deal with everyday life and what learning opportunities the respective living environments provide for older people to develop these competencies (Strobel et al. 2011).

IGeL-Media - a research project funded by the German Research Association DFG (SCHM 2391/3-1) - focuses exclusively on the acquisition of media competency among those older than 60, with the emphasis on informal learning processes triggered, for instance, through the exchange with children, grandchildren, or other significant members of a younger generation. This approach is based on the assumption that older adults mainly develop their competencies in dealing with digital

media through the exchange with younger contact persons. Through a secondary analysis of a representative survey on the interests in learning and further education among older adults living in Germany (Schmidt 2007) and through qualitative interviews with older people, these intergenerational learning processes and their contribution to the acquisition of media competencies are to be revealed (Schmidt-Hertha and Thalhammer 2012). So far, only first results of the secondary analysis have been reported, while the qualitative results will not be available until the end of 2012.

In the following, we refer to the results of the secondary analysis of 2.142 standardized interviews with adults aged between 60 and 80 living in Germany, carried out within the framework of the IGeL-Media project, as well as to the first results of the case studies from the CiLL project. These case studies are mainly based on qualitative guideline interviews which have been fully transcribed and analyzed following the principles of qualitative content analysis (Mayring 2000).

Computer Literacy Among Older People

Throughout the different countries, it can be seen that younger generations are much closer to digital media than the older ones. In practically all of the European countries – and also in non-European states – the percentage of computer and Internet users in the older cohorts is clearly below average. Although, for the year 2010, the percentage of Internet users among people older than 65 varied in the European countries from 3 % (in Rumania and Bulgaria) to 64 % (in Luxemburg). While the Scandinavian countries, in particular, belong to the lead group with more than 40 %, the quota of the so-called silver surfers is below 15 % throughout all of the Southern and Eastern European countries. At the same time, data from the Federal Statistical Office (2011, p. 35) show that the growth rates in Internet users have been highest among the older population groups during the last few years.

Computer Use Among Older Adults

According to the data collected by the German Federal Statistical Office (2011, p. 32) for the year 2010, the percentage of Internet users among those aged 45–64 had already reached 75 %, and that among adults older than 65 had reached 31 %, with a clear upward trend. In the context of the IGeL-Media project, the point of interest was not so much the percentage of users but rather in how far users and nonusers differ with regard to their life situation and their environment. By means of a logistic regression analysis, the influence of different factors was determined. Among these factors were in addition to socio-demographic variables, attitudes, and lifestyles, above all activities in the social field and leisure activities.

As was to be expected, both gender and educational level proved to be strong predictors for computer use. Older adults are significantly more likely to be among those using the computer if they are male and if they have higher school-leaving

qualifications than if they are female and have a lower education. About as important as gender for the probability of computer usage is the influence of calendrical age, even within the group of those aged 60–80. The influence of migration background and of employment status, although statistically relevant, is much smaller than that of the variables mentioned before. Nonetheless, older people with migration background and those not or no longer employed use the computer less often than other older adults. The most striking result of the regression analysis was that participation in cultural activities and programs was as meaningful with regard to computer use as was educational background or age. Older adults who regularly participate in cultural activities or who are themselves active in the fields of music or art are much more often among those using a computer than other older people.

Learning Processes: Why and How Do Older People Learn to Deal with the Computer?

We are now faced with the question of why and how people who never systematically learned to deal with the computer or the Internet (can) catch up on this in old age.

Here, the influence of educational and vocational biographies, hinted at above, manifests itself, as is confirmed by first evaluations of the CiLL project. Persons who actively used a computer during their vocational lives were able to acquire first competencies through measures of in-service training or through the exchange with younger colleagues. Often, interest was aroused through those experiences, and in the following a computer was bought for private use. Especially these people who had fun in dealing with the computer and who considered it to be a great asset improved their computer literacy through adequate courses offered in adult education.

A somewhat different picture presents itself with regard to people who had no contact with computers or the Internet during their working life. Here, the evaluation of the case studies often reveals a strong rejection of or lack of interest in the digital world. Frequently, persons from the immediate environment (especially one's own children and grandchildren) are drawn upon whenever information to be found on the Internet is required.

Another group of older adults deliberately and specifically learned how to use digital media once they had retired. Thus, they learn either by trial and error or by attending a course of further education or – as was true for many of the cases investigated – through the exchange with younger generations (again, above all, children and grandchildren). Often, these individuals display a strong interest in technology, and they are open to new things.

For many of the older people, contact with the younger generations can be cause and motivation for dealing with the Internet at the same time. For instance, if the grandchild studies in a foreign country and contact can be maintained through e-mail communication, digital media become relevant for the grandparents, too.

In many instances, the motivation to deal with the computer and to learn how to use digital media results from a consideration of their immediate usefulness.

But also the life situation of older adults plays an important role. Seniors with an active lifestyle and a stable social network seem to be more open toward the computer (Strobel et al. 2011). Here, patterns for an active shaping of one's life take effect, which enable a person to learn something new and to ask for help from people who accompany this process. The influence of the social environment seems to be just as strong in this age group as IT is the influence of the individual educational biography.

When looking at the results of the case studies, it becomes apparent that older adults are much more careful than younger adults in dealing with the computer or the Internet. Often, it is reported that, although the Internet is used as a medium to gain information, websites which require a registration or the revelation of personal data are avoided. Thus, a pronounced critical distance does not necessarily lead to a complete rejection of specific medial applications. For instance, being skeptical about security of e-business offers doesn't always mean to avoid all forms of financial transfers via Internet but could lead to limited e-business activities exclusively with well-known providers.

The Participation of Older Adults in Digital Worlds: Challenges for Society and Science

The social inclusion of older adults and also of the very old in aging societies has to be considered as one of the crucial challenges of the coming years and decades. In this context, modern information and communication technologies may have both integrative and ostracizing effects. On the one hand, they have the potential of allowing partaking in many areas of both public and private life, independent of any physical impediments or factors of mobility. On the other hand, generation-specific habits of media use and a lack of access to a computer or the Internet often mean that older adults, in particular, remain excluded from this increasingly more important medium. The aim to promote participation in public life for all, like it is defined in the memorandum on lifelong learning, is closely related to the use of digital media. When public life is more and more transferred into digital worlds and at the same time a significant number of people don't have access to these media worlds, this aim has to be missed. The partial coercion to use computer and Internet – e.g., when certain products or services are no longer available but online – is considered impertinence by older people. It would be just as presumptuous to require older people per se to have computer literacy on a specific level without considering their respective individual living environments and the related everyday demands.

The results of the CiLL study that are available so far clearly show that many older people like to resort to modern media if they recognize their immediate added value. Communication with children and grandchildren has proven to be a further source of motivation for dealing with modern media. Still, media use and media competence must not become an end in themselves; rather, their relation to the living environment of older people has to be meaningful and useful. An important

strategy to encourage more people to use ICT for participating in public life would be to strengthen and support the development of media competence especially for those groups which are excluded from digital worlds so far.

In order to support media use among older adults – depending on regional and social background – two different approaches seem to be of significance. On the one hand, participation in modern information and communication technologies can only be made possible for older adults if both the infrastructural basis and certain economic preconditions for Internet use are given. On the other hand, such participation requires not only basic knowledge of how to handle this medium but also knowledge of the risks and dangers connected with the Internet and about possible ways of minimizing these risks. While the first requirement describes a sociopolitical challenge, the second points to a task of adult education. Not only is it necessary to offer adequate educational programs for older people but also informal learning processes within the social environment have to be initiated and supported. These self-controlled learning processes can, for instance, take place in self-organized computer groups or on Internet forums which, in turn, can be initiated and accompanied by educational institutions. One such initiative which specifically promotes self-controlled learning among older adults is, for example, the EU project PALADIN (www.projectpaladin.eu). This project focuses on the development of instruments which are meant to provide older people as well as professionals and institutions working in this field with printed material and support resources.

Finally, it has to be noted that the differences revealed in the context of media use are not differences between age groups but between generations. Future generations of older adults are already much more familiar with digital media and have integrated these quite naturally in their everyday lives. Thus, for the future, it can be assumed that among the very old generations, too, computer and Internet applications will be used in various ways and that the opportunities of social participation connected with these will become more and more important.

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