ICT skills 4All

ICTskills4All

Empowering old adult citizens for a digital world

Intellectual Output 1

Report on online resources, including type of information and content, to improve digital skills in Older Adults

Co-funded by the Erasmus+ Programme of the European Union

Project reference
2018-1-PT01-KA204-047353

01/06/2019

Contents

Index of Figures and Tables

Introduction

One of the greatest achievements of the last century was the increase in average life expectancy (Mirkin & Weinberger, 2001). In 2015, there were 1.3 billion people aged 55 years or older, and this number is expected to more than double by 2050, reaching 2.6 billion (representing 26% of total population). Also, the prevalence of people aged 80 or older will grow even faster when compared with old adults in general. By 2015, 125 million people were 80 years or older and that number is expected to more than triple by 2050, reaching 434 million (approximately 4% of the world population) (United Nations, 2017).

Older adults are facing an increasingly technological society, which make them feel naturally excluded, mainly due to the difficulty to handle and use the technology, the difficulty in access to this technology and the feeling of incapacity in learning new things (Sixsmith & Gutman, 2013). The absence of digital skills in senior population is often synonymous of social isolation, segregation in access to information and services, loss of autonomy and increased sense of inability to adapt to the society (Borges, Sinclair, & AGE Universal access and Independent Living Expert Group, 2008).

Improving digital skills in old adults is one way of improving their quality of life through an active lifestyle (education, social participation, hobbies, etc) and freedom of choice and decisions (leisure time, information, travelling, health care, etc). By improving such knowledge, older adults can live healthier and in an independent way, enhancing their quality of life, which may even allow them to stay on the job market for an extended period, improving also society´s productivity (Damant, Knapp, Freddolino, & Lombard, 2017). Further education has also benefits for mental health, keeping older adults minds fresh and ready for modern era challenges, facilitating their participation in society, as independence and autonomy (World Health Organisation, no date).

Using data from Wave 6 (2015) from the Survey of Health, Ageing and Retirement in Europe (SHARE) database, we found at european level that 36.1% of older adults have basic computer skills (fig. 1) and 35.9% have no computer skills (fig. 2).

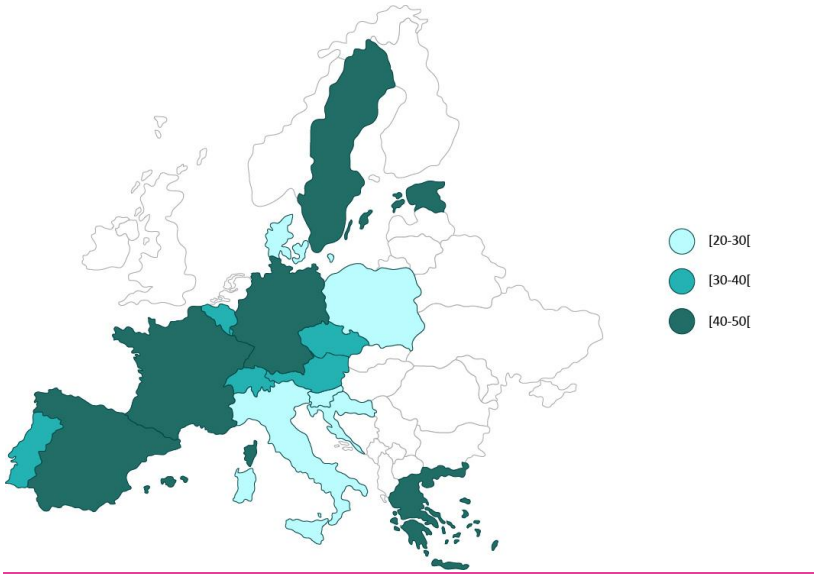

Figure 1 - Prevalence of basic computer skills by country

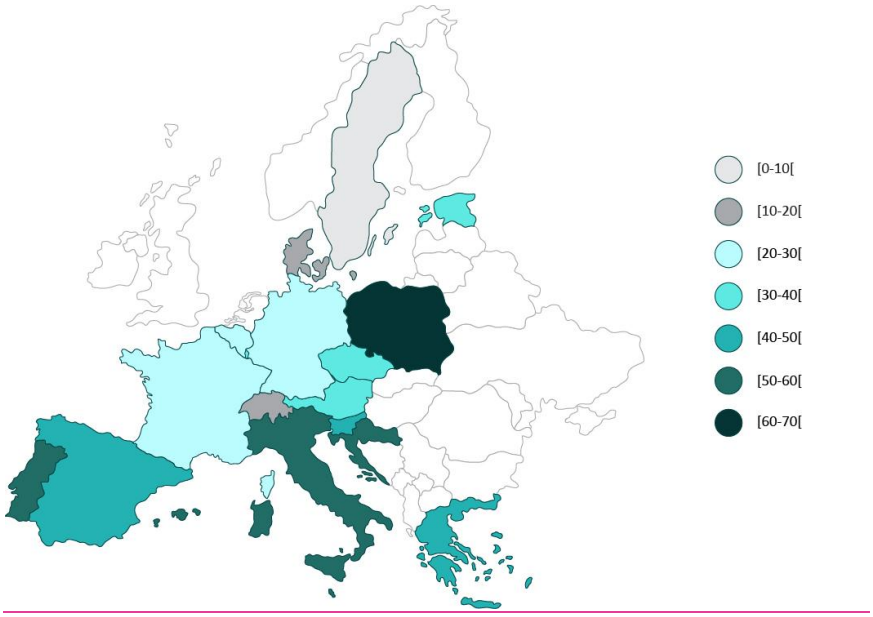

Figure 2 - Prevalence of no computer skills by country

One of the objectives of the ICTskills4All project is to develop online content to improve digital skills in older adults. Prior to this development, we found it necessary to perform a review of existing online resources dedicated to improving the digital skills of adults aged 55+ at regional, national, European and international level.

This intellectual output consists in a revision of existing online resources dedicated to improve digital skills amongst older adults, at regional, national, European and international level, covering the efficacy of such resources. This revision was performed by all partners who provided data crossing different databases at national, European and international levels. The public content of such resources has been analyzed as well as several Graphic Design aspects, focusing Senior Centered Design and assessing if the identified resources meet the needs of the older adult user. This report will be used by the partnership to develop the website information/educational materials.

Methodology

Each partner has performed a regional and national search of online resources dedicated to improve digital skills in older adults. This search has been developed using online data of training providers, coupled with meetings with existing educational organisations and trainers in order to understand what resources they use and value. In addition, University of Porto and Cybermoor have searched for international resources and ALL DIGITAL for European online resources.´

Identifying the efficacy of the courses has been challenging as there are few publicly available evaluations of the impact of the training on the learners. Therefore, this review had its focus shifted to an analysis of content of these resources. The data gathered was processed by partners in order to build a concise observation of several aspects such as type of access (free/paid), type of information and media prevalence for online training (video/text/interactive), user interface (navigation) and graphic design (typography). This observation defined an overview of the documented websites, which was the starting position of this report.

1. Online training resources

1.1 Portugal

1.1.1 1.1.1 Overview of online tools

In Portugal ICT training programs appear commonly in projects/senior universities which are social answers to local problems. Projects focused on social inclusion can access funding for equipment like computers, tablets but find it harder to pay for upgrades to equipment and software, leading often to outdated hardware and software for course delivery. Given that local delivery is predominant in teaching ICT skills, it is not common to see trans-regional and online programmes applied on a larger scale.

The only reference of online training that we identified in Portugal is MUDA. This is a national project, which intends to improve digital participation amongst Portuguese citizens specifically by using digital services like home banking, health services, communications, online shopping, public services, etc. The project has partners including the Portuguese State, private and public companies from different market sectors. The participation in the project is open to the population in general, however the target suggested and the intergenerational approach focus older generations. MUDA[1] has two approaches to train people on how to use digital services and improve ICT skills: intergenerational training and online resources. For this report, online resources are the ones that we observed. The content available online is mainly video-based training and instructions on how to be and communicate online, to how to use digital services, to online safety. This is the only case we identified clearly as online training for older adults in Portugal. MUDA is a project which associates different companies and the Portuguese State, co-financed by the EU and public funds.

1.1.2 1.1.2 Overview of impact and content

MUDA project started 2 years ago and by this reason there are no available results of its impact on improving ICT skills among the older adult population.

[1] More info: https://mudanaescola.pt/

MUDA has been projecting itself at national level, reaching a crescent number of older adults. It provides open/free online access to several videos and tutorials dedicated to improve ICT skills among the general public, but with a particular focus on older adults. This online materials are of informative nature, more than learning contents. However, they are complemented by the project's main focus which is in-person training gathering older adults and youngsters, promoting intergenerational learning approaches.

On the other hand, the online materials appear to be oversimplified in terms of informative content and general structure of learning topics.

1.2 United Kingdom

1.2.1 Overview of online tools

In the United Kingdom there is a mixture of training resources focused on online and face to face learning. Large organizations such as Age UK and University of the Third Age provide local training opportunities specifically for older adults. Online centers provide training for all age groups and their location in community centers and libraries mean they are accessible to elderly people. From the late 1990s, UK online centers have managed a consistent approach to developing online resources to complement training offered face to face. These face to face training sessions are supported by online learning – beneficiaries will work through activities and tasks while the trainer is available to provide support if required. They can also work unsupervised on a course if they have access to ICT equipment at home or in a library.

This is financially supported partly by the government but is often delivered by a charity which has sufficient scale to develop online materials. Private initiatives like Barclays Digital Eagles offer a mixture of online and face to face to beneficiaries of different ages.

UK Courses available purely online, e.g. Learndirect focus more on "productivity" training around ICT and are paid for. They are delivered by private companies that sometimes receive government funding to subsidise the courses. This model does not work particularly well for basic ICT skills as there is a reluctance to do the training amongst older adults without introducing cost as an additional barrier. There were no courses which looked at more advanced ICT skills for older adults, however these are available to do online. These advanced courses are focused more on improving productivity in the workplace and are not free.

1.2.2 Overview of impact and content

In the UK we identified 7 websites with open/free online resources for the general population; only two of them are dedicated specifically to the older adult population – TechBoomers and U3A. Neither of these two require a login or user account to view the online content. The Good Things network stores data about time taken to complete their courses which run in libraries and community centers. Unfortunately this is not publicly available for analysis. The U3A has carried out analysis of their training in a broad sense which covers more than ICT and find that the face to face sessions deliver a wide range of benefits to participants, such as addressing loneliness[2].

There is already a move for some of the courses to back up face-to-face learning with very good online content. These are training exercises that people can do at home or with little supervision, although they lack accreditation. This is less of a problem for training elderly people who have retired and do not need a certificate to show an employer what their skills are.

BBC Webwise has resources to guide people but does not go into the detail of how to set up an email address as it stays technically neutral. In contrast, Techboomers has links with companies and their websites / apps and explains how to use them with a focus on older adults. Home and Learn has beginners courses available free online. The legacy courses for different Microsoft Operating systems and programmes demonstrate that online course development needs to keep pace with the relentless development of new platforms, apps and services. Vision2learn offer free courses solely online which focus on productivity. Basic skills could benefit older adults but do not target them specifically.

Furthermore, most free courses are not solely focused on elderly learners and they are therefore not tailored to their requirements. The content on the courses and language used is not particularly easy for older adults to understand.

1.3 Latvia

1.3.1 Overview of online tools

[2] https://indd.adobe.com/view/c99ad603-0622-4636-b12c-9f8ad363dae8

In Latvia it is uncommon for older adults to learn online, especially in the sense of acquiring digital skills. Taking into account the socio-demographic context and work culture, in general there is low demand for digital skills among older adults. Public and banking institutions providing e-services cover their part in reaching out to the older adult population by organizing regular regional seminars on using their services. Nevertheless, it is not possible for older adults to easily find information, support and learning materials to attain digital skills and e-services independently. Based on this problem the State Culture Information Systems Centre is curating free courses for seniors on computer literacy in more than 800 public library institutions in Latvia, and several organisations whose target audience is the senior segment organize paid courses. However these courses are for groups and lead on premises. Only four e-learning materials for seniors were identified, moreover these materials cannot be easily found in the Internet and they are usually used in the digital courses by the trainers as guidelines.

Four online resources were identified in Latvia: Mana Latvija.lv; materials available in the State Culture Information Systems Centre webpage; *Get connected, Latvia*; and Seniors Online (Nordplus project initiative). All have free/open access without requirement for login or account creation.

1.3.2 Overview of impact and content

Mana Latvija.lv[3] is funded by the Ministry of State and Regional Development whose priority is to digitalize public e-services. Its portal provides brief descriptions and explanations of all available public services, instructions for use, and useful links to all necessary e-services. However, it is hardly viable to learn more about these e-services without the instructional support from the public organizations themselves. Thus, this information cannot be used independently and must be combined in a tandem with free informative seminars. The subject of public e-services is a teaching topic for trainers in the public libraries and private education organizations in addition to free short seminars held by the public e-service organizations themselves.

The materials available in the State Culture Information Systems Centre webpage cannot be easily found. Moreover, these materials are meant for the educators and not for anyone to accidentally stumble upon when searching for learning materials. However, these materials are widely and effectively used at the courses lead at all public libraries in Latvia. These materials are supported with methodologic information for the educators to be able to work effectively with various

[3] More information at: https://mana.latvija.lv

people: seniors, people with special needs, people with impaired vision, orphans and other social groups[4].

"Pieslēdzies, Latvija", *Get connected, Latvia* in English, is the best and well-known practice in Latvia. It is a project that started in 2013 and has been well-curated ever since. The opening of the project was held at the premises of "Riga Active Seniors Alliance" being the largest senior-driven and senior-targeted organisation in Latvia. The aim of the project was to teach digital skills to those in need of such skills, having the main target audience as seniors. In 2014 the project had taught digital skills to over 20 thousand seniors, each following year addressing on average 2200 seniors in Latvia, a large part of which is due to the collaboration between Lattelecom and Riga Active Seniors Alliance. In 2018, 31 010 seniors have been taught digital skills in the project "Pieslēdzies, Latvija". Moreover, Lattelecom provides telecommunication, Internet, interactive TV and other services, and a learning e-book from the Seniors Online Nordplus project initiative lead by private education organisations from Latvia, Lithuania, Estonia, Finland.

Text prevails as the predominant medium for learning content, having also been identified some video and interactive features in the State Culture Information Systems Centre webpage and *Get connected, Latvia* respectively.

On a positive note, these resources present the learning material in a simple way. The content seems to be easy to understand, however the question arises as to whether this learning material assists in fully comprehending the digital skills, whether related questions can be answered, thus whether the material is informative enough to continue to encourage the senior to continue learning digital skills. Another positive aspect is the layout that is similar to that of a book. As the book is a classical format for acquiring written information, especially for older adults, it is easy to predict the flow of learning content and the depth of acquiring skills, knowing that the next page will certainly build on what the senior has previously acquired.

The main downside of available learning materials is their scarcity and the effort needed to be able to find them, as this is not a simple task. Moreover, this is a rather disappointing experience given the lack of materials available on the Internet. Therefore, the seniors are willing to acquire digital skills at courses rather than on their own.

[4] The materials can be accessed at: http://www.kis.gov.lv/agentura/metodiskie-materiali/ and http://www.kis.gov.lv/agentura/macibu-materiali/

1.4 Poland

1.4.1 Overview of online tools

In Poland, we identified 14 online course providers with different packages – 3 are paid courses. Two have a free with paid access charging model. Most of the training courses use interactive text with 5 also using video.

There is a huge number of different online courses for adults; only some of them specify older adults (55+) as target group and the majority is dedicated to the labour market and business skills and competences.

Some of the online resources are no longer active and there is no information about the status; most probably, these were projects which have not been continued at the end of the funding period.

There is no single, comprehensive source providing information about available, free, accessible and methodically approved online courses for seniors. Although the ICT education for seniors is one of the governmental priorities, there are no standards/guidelines either for the trainers' competencies, or for the special curricula or learning pathways.

1.4.2 Overview of impact and content

Only one of the online resources - pisupisu.pl - is interactive. Although pisupisu.pl is a platform aimed at children for them to practice their writing skills: grammar and spelling as well as other language games (in Polish), it is a very useful and tested tool to improve computer use and writing skills of seniors who are at a beginners level.

The majority of the courses are designed as e-books with information and descriptions on how to use a computer and other supporting programs, including how to use word processors and Excel, how to download photos or films, learning the basic steps to create and use emails, Facebook, etc.

In general, the impact is measured by tracking the user progression through the course on a regular basis, and they receive incentives to complete tasks. However, there is no access to the evaluation of the functionality and effectiveness of the courses.

www.pisaniebezwzrokowe.pl uses a ranking list of users with scores and number of errors to allow peer monitoring.

There is no database available to find the feedback or any comments from the seniors-users of the online courses, so information referring to the efficacy or barriers is missing.

The most comprehensive and practice-based evaluation of the ICT learning and teaching among seniors citizens is gathered by the kometa.edu.pl - Digital Education Network. The Network is interested in digital education development across all age groups and several publications and reports are disseminated free online[5].

There are several courses in Poland, some free and some paid, and many are targeted at older adults. The number of courses seems to increase but the quality or efficacy are not defined. The courses are often in the form of e-books and have no practical, interactive component. Individual, self-steering learning with self-motivation is necessary to take any advantage of this kind of courses. This is not easy, especially among beginners in the ICT world. Some of the courses offer only the first steps for free, without any progress evaluation. There is no opportunity to continue to the next steps or full curricula without paying. In these cases, detailed information about curricula is very rarely available. Because courses are often dedicated simply to adult users, text fonts are not always adjusted to the older recipients.

1.5 European funded projects

1.5.1 Overview of European programmes

One of the main priorities of the European Commission's Digital Agenda for Europe is the promotion of digital literacy, skills and inclusion. This means that the European Union while acknowledging that some parts of the population are still excluded from media literacy, believes that elderly people as representing a great proportion of this population, must become e-seniors as soon as possible. At the same time, active ageing means that senior citizens strive to be independent and autonomous, taking part in personal, societal, economical life along with their own contribution.

The European Commission has promoted several initiatives to allow organisations to work together and meet this priority. An analysis of data available shows a great number of European projects focusing on elderly users' needs in using, learning and taking-up the ICT that have been implemented in the last years. Many of them fall under the Erasmus+ programme and more specifically are part of the Key Action 2 – Strategic Partnership in the field of Adult Education.

[5] More information: www.kometa.edu.pl

Strategic Partnerships in adult education can last between 12 and 36 months and are a flexible way of working with partners from different countries. Strategic Partnerships in adult education must focus on activities designed to improve adult education provision across the participating countries.

A closer look at the EU funded projects implemented across Europe in the field of seniors' empowerment in ICT shows that there is a mixture of training courses focused on online and face to face learning. Narrowing our focus to online resources only, in line with the aim of this search study, it can be stated that the majority of these resources is composed of e-learning materials focused on basic digital and ICT skills. For instance, the Seniors@DigiWorld project wanted to empower senior citizens to use tablet computers independently and profit from this usage in daily life. In this view, the online course qualifies multipliers who work with seniors and have little experience with the Tablet PC. Similarly, the overall aim of the AcTive project was to develop training materials, supported by an online platform, that pay attention to the specific needs of people who are not experienced in using assistive devices (e.g. like smartphones or emergency call systems). Likewise, within the ELSSHA project (*European Home Learning Service for Seniors Associations*) an e-learning component centred on basic ICT and digital skills was developed.

Some of these projects aim to foster the employability of older citizens such as the Senior Plus platform, developed in the context of the Senior Plus project, which aims to connect people with training opportunities and providers. This co-ordination role aims to make the most of existing resources and ICTskills4All should register a presence on the site.

However, there are also online resources that aim to enhance more advance and/or users' specific skills. These resources are either e-learning based materials as well as resources designed to inform or entertain. The UISEL project (*Ubiquitous Information for Seniors Life*), for instance, offers training courses for teachers and staff that work with senior citizens focusing on E-government (taxes, finances, social security), E-banking, E-health, E-interaction, E-information and media preventing isolation, and even leisure and time occupation. The ELSSHA project foresees a course on culture named "UNESCO course" where participants had to present two sights, which are listed on the UNESCO World Heritage List. CINAGE (*European Cinema for Active Aging*) is a course addressing senior's empowerment, using cinema as instrument for active ageing. The P3AE's objective (*Promoting Third Age Education*) was to increase the wellbeing and quality of life of senior citizens by creating an ICT Senior Learning Platform with online courses for seniors combined with face-to-face learning. The SILVER CODE project aims at improving the quality of life of old people by providing them with training courses on coding.

On the other hand, some resources have a specific focus on seniors' health and well-being such as WHOLE project (*Well-being and Healthy Choices for Older Adults and their Carers*) which looks at developing ICT skills through engaging people with health and lifestyle coaching.

Finally, other projects are specifically addressed to adults' educators in order to provide them more concrete lifelong learning opportunities. Example of these projects is the SKILLSUP project (*Skilling up educators for today and tomorrow's labour market*) which developed an Open Multilingual collaborative platform with Digital and Soft skills courses for adults' educators. Likewise, the Telle project (*Teaching and Learning for Life in Europe*) aims to develop adult educator's internationalization as well as their general and professional competences by teaching them to use photographs, video clips, and social media applications as well as websites to teach and train. The objective Ed-way project (*Education on the way: introducing technology-enhanced informal learning*) is to facilitate the recognition and use of informal and non-formal learning in the field of adult education and training (including seniors as a fundamental part of the intelligence society). Online training resources including short professional video/multimedia productions have been developed.

1.5.2 Overview of impact and content

All EU-funded projects have tracked the numbers of end-users engaged as part of their contract. However, while for some projects the final evaluation and progress report including evidence of end-users' involvement in the online courses, is easily accessible, for some others this information is difficult to find.

The impact assessment of the projects whose evidence is available, was mostly measured by gathering feedback from the participants through questionnaires and online surveys applied before and after the implementation of the course. In some cases, focus groups were conducted.

For instance, most of the participants in the Computer-based course of the ELSSHA project seem to have been satisfied with the course. For more experienced users, all of the topics have not been so useful. In any case, the majority expressed satisfaction with the content of the learning units. The UNESCO course covering the topic of culture in Europe was rated overall very high.

The feedback from the participants in the Seniors@digiworld has been clustered and the following main topics were found: the importance of the tablet for the target group; the importance of

structure and methods; the importance of networking and exchange; the importance of involving the target group.

The evaluation of the CINAGE project showed that there was a broad consensus as to the added value of this action which is not only cognitive. The project made new interpersonal relationships amongst the team possible.

All materials of the AcTive project were also evaluated by the end-users and received very positive feedback.

In addition, EU funded projects occur commonly during a short term of time, which limits the successfulness and sustainability of the developed resources, limiting their lifespan. However, all resources produced under EU funded projects are free to use and some show concern in adapting the layout of the developed resources and platforms to the older adult audience. Examples of this are the Ed-way project's website which foresees a feature to change the font size and it is easy to navigate as well as that of P3AE; the AcTive project which produced a guide containing tips on how to use the online platform; or the Skillsup project which presents an easy access to the resources. We verified that 6 out of the 13 resources analysed require users to create an account in their website in order to be accessed; the type of content available for training varies between text, video and interactive content such as quizzes.

1.6 International resources

1.6.1 Overview of online tools

An analysis of international online resources provided a better range of courses offered specifically to older people. The courses featured in the research are written in English and come from Australia and the USA, as well as the UK which are mentioned in section 1.2.

Be Connected – Every Australian Online is an initiative from the Australian Government in order to foster digital inclusion and, therefore, social participation from all citizens. The website offers a simple and informal e-learning solution in a variety of topics starting from the very basics to online safety and even to how to become a digital mentor and help other people learning ICT skills. Other websites specifically oriented towards older adults and learning ICT skills are Skillful Senior, which offers training in basic and operational ICT skills, specifically how to use hardware, and GCF community, which features training on basic to intermediate computer skills as well as work and career skills. We also identified Meganga which is directed towards older adults and general

beginners in ICT, offering structured courses in a variety of topics from the simplest to the more complex ones.

In addition and even though we acknolwdge it may require updates in terms of content and layout, Jan's Illustrated Computer Literacy 101 appears as a website not focused on online training, but instead as one with general user guidelines on several programs like Microsoft Word, Excel and Powerpoint, focusing the user with basic skills who already knows how to perform online research and follow instructions to start using one of the identified apps.

1.6.2 Overview of impact and content

Of the selected international courses, there is no publicly available evaluation data, but some collect feedback from users. Be Connected – Every Australian Online is an Australian Government initiative, but although users are encouraged to give feedback, neither this nor an analysis of the course outcomes is available through the website. GCF Global displays positive testimonies from both users and tutors, but again, there is no analysis of learning outcomes.

Be Connected has a clear layout and goal – to increase the confidence, skills and online safety of older Australians. The website is easy to use, allowing the user to change the font size, and providing a simple list of beginners' tutorials using video and interactive content. The user is able to save their progress with a free account.

Skillful Senior is specifically directed at older adults, and provides the user with a virtual tutor who talks you through the basics of using the mouse, keyboard and monitor using interactive content. The website does not overwhelm the user with information, but the course doesn't go beyond the basics of using the computer set.

GCF is not specifically adapted for elderly people, but it is easy to navigate. GCF community provides users with over 2,000 lessons, as well as videos and interactive games. There are specific courses to be followed, and the website records which lessons you have completed without the need for an account. There is also a button on each lesson which allows the user to print it off.

Meganga is aimed at older adults and beginners but it is not simple to use, offering a series of articles and video tutorials, rather than a structured course that progresses from the basics to more advanced skills.

Taking into consideration current design and user experience knowledge and trends, Jan's Illustrated Computer Literacy 101 shows a heavy layout in terms of readability and interface interaction. Text is the only means to convey information, featuring images and icons in between the posted information.

This revision also observed two informative websites - AARP and Savvy Senior. Although these websites are not specifically directed to online training on ICT skills, they are targeted at older adults featuring a variety of articles (AARP) in several areas of interest, including ICT, or useful links to online resources (Savvy Senior). Along with these websites, we also took YouTube into consideration as this is one of the most significant means for informal online learning nowadays. Using video as output, YouTube includes several tutorials and informative videos, channels and structured playlists of learning content. YouTube also appears as one option that allows the user to keep track of the already seen videos once one has a Google account, which can be useful to map one's learning process in a given topic, channel or playlist.

All these websites have their content openly accessible, being AARP the only which features a possible paid access with extra benefits for the user. Along with this AARP possible login, only YouTube requires a login and account creation which is optional and probably useful to keep track of the previously seen content whether they are isolated videos, or in a playlist or channel.

2. Overview of Graphic and Interface Design

Besides analyzing course content and effectiveness, this report observes key design aspects in order to proceed with the development of the activities for this project. For this brief analysis, we identified three design aspects to focus on, which are related to typography and website structure: text font family and size, and website navigation. We regard these as basic starting positions to be amplified in a later analysis – for instance, typography will be studied not only in text, but also in titles, subtitles, page composition and information structure. It will also be studied according to the target public, identifying good typography practices for digital media development towards older adults

Typography stands as one of the basic composition principles for graphic design (Baseman, 2005, p. 19). Our option to analyze text font sizes at this point relates to the fact that text represents a reference for page composition and readability, defining hierarchy and rhythm with the use of visual language connected with time and motion (inherent to the usage of a device's screen) (Worthington, 2005, pp. 185–186). Given our target public – older adults – these are aspects that must be taken into consideration prior to developing digital content, since it must be developed according to the cognitive, visual and motor conditions common among this population segment.

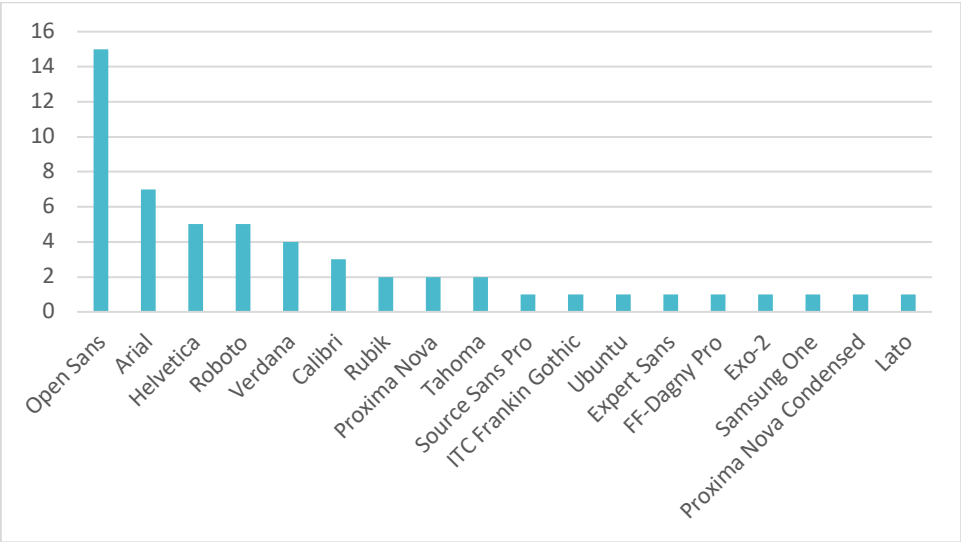

Figure 3 – Number of websites according to font family used in text

We analyzed and previewed 53 websites on desktop which offer courses in ICT for older adults, one of which had two fonts used in text. YouTube also appears with online courses for seniors so, for this website, we considered the more relevant typography elements the subtitles for the video thumbnails, comments and descriptions, all of the same font family with 14 pixels size. Regarding the font families in the observed websites, we concluded that all text fonts are sans serif, occasionally having serif or script typefaces in headers. The most common font across our sample is Open Sans (by Steve Matheson/Ascender Corp, 2011), followed by Arial (by Robin Nicholas and Patricia Saunders/Monotype, 1982), Helvetica (by Max Miedinger and Linotype Design Studios, 1957) and Roboto (by Christian Robertson, 2011) typefaces. Open Sans and Roboto are available in open source via Google Fonts, whose stats point that both fonts are used in over 24 and 25 million websites worldwide, respectively. Open Sans, Roboto and Arial appear as fonts previously identified as more legible and functional directed to senior audiences, being studied regarding font type specifications, space and alignment, and text structure (Fonseca, Costa, & Amado, 2014). From the three, Roboto appears as the most balanced in structural terms, with more balanced ratios between x-height/font size, ascendant height/font size, descendant height/font size, and text width (Fonseca et al., 2014).

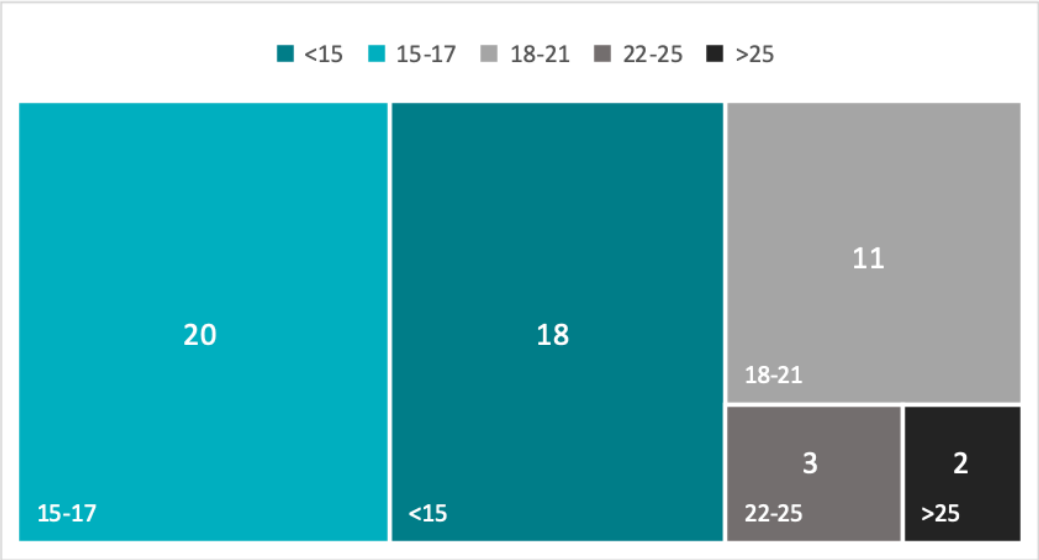

Figure 4 – Number of websites according to font size used in text

Although we found a common use of sans serif fonts, the offered sizes are heterogeneous. The smaller size we identified was 10,5 pixels (px) and the biggest was 28px. From the 53 analysed websites, 3 feature variable text sizes and only 2 allow the user to adjust the font size. These 2 cases

offer sizes starting at 14px and are the only ones with text font sizes above 25px. Sixteen pixels appear as the standard size for desktop browsers, close to the minimum text size recommended of 12 points (Fonseca et al., 2014). User interface guidelines also point 16px as the minimum size for heavy text pages as well as suggest 18px to be a comfortable size for the average user (Kennedy, 2018). Even though we acknowledge that each font's characteristics may define variations for the appropriate size to use and, therefore, to these guidelines, we verified that approximately one third of the e-learning websites we analyzed feature text fonts with sizes below 15px and approximately two third has font sizes below 18px.

Regarding navigation, current User Centered Design guidelines raise the awareness for the complexity inherent to complex navigation systems and hierarchies, which may contribute to one feeling lost or confused while in a website (Lin, 2017). Web design guidelines for older adults are even more assertive towards this aspect, pointing to clear and simple navigation systems with a minimum of connections possible in order not to overload short term memory (Fonseca et al., 2014). These guidelines include avoiding menus that oblige to move the mouse and, therefore, use fine motricity skills. Examples of this are drop-downs, rollover (Fonseca et al., 2014) or pull-down menus (Kurniawan & Panayiotis, 2005). Focusing online training for older adults, these notions led us to analyse the navigation hierarchy and levels of each website. Taking into consideration different types of navigation (Kalbach, 2007) we considered the following levels of navigation for the websites we analysed:

- 1 level: homepage or landing page of the website;
- 2 levels: website featuring a main or global navigation (common as the reference for navigation systems);
- 3 levels: website with a global navigation, which features subsequent local navigations associated to the main one;
- 4 or more levels: global navigation with more than 1 level of local navigations

Table I – Number of websites according to navigation levels

Navigation levels	Number of websites
1 level	2
2 levels	26
3 levels	21
4+ levels	4

In our sample, we detected 6 websites with more than one navigation bar or system, usually showing a secondary nav or menu connected to a larger structure (for instance, the primary navigation is dedicated to the website's purpose while the secondary links the website to a wider structure such as a company or enterprise). Regarding navigation levels, we found two cases without a clear navigation bar or system, showing only homepage links as navigation options; these were labelled with level 1. We concluded that the majority of websites follow a structural navigation (Kalbach, 2007) and feature one main/global navigation, following the standard of a top and primary menu with direct links. However, we verified that 25 out of the 53 websites we analyzed show navigation systems with 3 or more levels, commonly featuring drop-down menus and, therefore, more complex hierarchies and interactions.

Conclusion

This analysis covered websites from all the partners' countries, at European and international levels, and has allowed us to identify the necessary features to incorporate into ICTskills4All.

One of the main aims of the search was to establish the efficacy and impact of the online courses, however this proved challenging due to the lack of data available on the websites.

Very few of the projects/services provide data on their take-up and usage. This makes it hard identify what has been successful and unsuccessful. Feedback is given by individual learners and it is probably collected for funders but not readily accessible for researchers. Some providers may see ICTskills4All as a competitor which will attract users from their service. Funders may be in a better position to provide efficacy data as they have less vested interest and more interest in showing the impact of their work.

Online training often loses ground to in-person learning since, as pointed in intellectual output 2, social interaction with other learners and contact with trainers assume an important role to motivate and guide older adults through the learning process, to help and support in real time when the user has a problem, being these two main gaps of autonomous online training. Online courses for seniors are often partly funded as a means to get older adults to switch to digital channels to interact with government and other services. This reduces the cost of delivering government services but, at the same time, it can be a drawback to older adults who value interaction with staff when they are carrying out transactions with government.

Graphic and interface design appear as a core issues to successfully deliver content and training, being areas which often dictate the success, sustainability and longevity of online resources. Concerning the analysis in the field of Design, this revision will evolve into a more detailed observation of User Centered Design for older adults, focusing on further aspects. Nevertheless, we realize that there are several sites on the web which are directed for older adults and do not show a clear construction according to specific guidelines for the intended audience. Text prevails as the mean to pass on information and knowledge in open/free access websites and we concluded that many of the courses identified were not fully adapted for older adults and would benefit from larger font sizes and an optimized layout with clearer information hierarchies. In addition, the requirement to create a user account in certain websites limits the usage of online resources by complexifying the interaction in the website or by placing a monetary barrier in case it is a paid membership. Moreover, we concluded that online training and, consequently, its

interface would be more intuitive with straight forward courses to follow and simple navigation systems, features that are not uniform across our observation.

This brief revision suggests that there is a need to implement proper graphic and UX/UI design guidelines into web development for older adults, which we would expect to be a concern for websites directed for this audience and for those with worldwide projection. In developing the ICTskills4All platform, there should be a commitment in planning content development focusing design and information itself, taking into consideration new services that become available, suggesting topics that are coherent with nowadays technological context – for instance, not many online training resources offer training for iOS. These conclusions underline the importance of projects that promote the dissemination and application of policies for online resources for such audience, taking Graphic, Web and User Centered Design as core areas for accessibility and digital inclusion.

References

Baseman, F. (2005). Liberal Arts is Old News. Em S. Heller (Ed.), *The Education of a Graphic Designer* (2.ª ed., pp. 19–21). Nova Iorque: Allworth Press.

Borges, I., Sinclair, D., & AGE Universal access and Independent Living Expert Group. (2008). *Media literacy, digital exclusion and older people*. AGE.

Damant, J., Knapp, M., Freddolino, P., & Lombard, D. (2017). Effects of digital engagement on the quality of life of older people. *Health and Social Care in the Community*, *25*(6), 1679–1703. https://doi.org/10.1111/hsc.12335

Fonseca, I., Costa, L., & Amado, P. (2014). Desenho de interfaces para seniores: desafios e oportunidades no projeto SEDUCE. *ResearchGate*. Obtido de https://www.researchgate.net/publication/274078657_Desenho_de_interfaces_para_seniores_desafios_e_oportunidades_no_projeto_SEDUCE

Kalbach, J. (2007). Designing Web Navigation - Chapter 4. Types of Navigation. Obtido 29 de Abril de 2019, de O'Reilly website: https://www.oreilly.com/library/view/designing-web-navigation/9780596528102/ch04.html

Kennedy, E. (2018). The Responsive Website Font Size Guidelines. Obtido 26 de Abril de 2019, de https://learnui.design/blog/mobile-desktop-website-font-size-guidelines.html

Kurniawan, S., & Panayiotis, Z. (2005). Research-derived web design guidelines for Older People. Obtido 26 de Abril de 2019, de https://issuu.com/panayiotiszaphiris/docs/kurniawan__zaphiris_-_2005_-_resear

Lin, S. (2017). The Rules for Modern Navigation | UX Booth. Obtido 29 de Abril de 2019, de https://www.uxbooth.com/articles/the-rules-for-modern-navigation/

Mirkin, B., & Weinberger, B. (2001). The demography of population ageing. *United Nations Popul Bull*, 41–48.

Sixsmith, A., & Gutman, G. (2013). *Technologies for Actiev Ageing*. Boston, MA: Springer.

United Nations. (2017). World Population Prospects - Population Division - United Nations. Obtido 30 de Maio de 2019, de United NAtions website: https://population.un.org/wpp/DataQuery/

World Health Organisation. (sem data). *Global Health and Aging*. Obtido de https://www.who.int/ageing/publications/global_health.pdf?ua1%2F41

Worthington, M. (2005). Computer Don't Speak, Type Does. Em S. Heller (Ed.), *The Education of a Graphic Designer* (2.ª ed., pp. 184–188). New York: Allworth Press.