DIGITAL INVOLVEMENT AND SKILLS DEVELOPMENT TOOLKIT

Digital Facilitator Toolkit

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Authors by Institutions:

Renata Ochoa-Dąderska (Instytut Badań i Innowacji w Edukacji)
Gabriela Ochoa-Dąderska (Instytut Badań i Innowacji w Edukacji)
Kacper Kotlewski (Instytut Badań i Innowacji w Edukacji)
Javier Sánchez García (Universitat Jaume I)
Luis Callarisa-Fiol (Universitat Jaume I)
Juan Carlos Fandos-Roig, (Universitat Jaume I)
Zivile Navikiene (S.A.F.E,Projects)
Justina Navikaite (S.A.F.E,Projects)
Metin Demirci (DALYA)
Zofia Gródek-Szostak (Uniwersytet Ekonomiczny w Krakowie)
Agata Niemczyk, Uniwersytet Ekonomiczny w Krakowie
Chęcińska-Kopiec Agnieszka (Akademia Wychowania Fizycznego w Katowicach)
Luis Ochoa Siguencia (Akademia Wychowania Fizycznego w Katowicach)

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This toolkit is based on the three deliverables developed in the framework of work package n°2: Digital Involvement and Skills Development Toolkit

Project Number: 2022-1-PL01-KA220-ADU-000088404
The three deliverables have been published in ZENODO by DigIN consortium:

1. [Digital Landscape: Perspectives of Trainers and Learners on Adult Digital Social Inclusion](https://zenodo.org/records/8395477) [https://zenodo.org/records/8395477]

2. [Exploring Digital Tools for Adult Education Trainers: Best Practices Across Europe](https://zenodo.org/records/8395367) [https://zenodo.org/records/8395367]

3. [Digital competence map for adult education facilitators](https://zenodo.org/records/8395035) [https://zenodo.org/records/8395035]

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1. Introduction

1.1. What are the specific objectives of this work package and how do they contribute to the general objectives of the project?

The objectives of this work package align with the project's broader goals, which are in response to the pandemic's significant economic impact and digital disparity within the European Union. The European Commission has emphasized the importance of accelerating the digital transition by investing in digital learning infrastructure and technology. While educational institutions have made efforts to shift their offerings online, the quality of online pedagogy has frequently been overlooked. There is an urgent need to improve instructional design quality and ensure that learners achieve the learning outcomes they desire.

The goal of this work package is to address these issues by providing educators and trainers with digital pedagogy skills as well as a set of adaptable and reusable tools and instruments based on instructional design models. It will also create a competency map to define the role of a digital facilitator in engaging adults and improving their digital competence.

This work package will focus on:

- Analyzing successful tools and instruments, incorporating feedback from adults and educators.
- Creating an innovative competence map for digital facilitators working with adults, meeting the demand for digital pedagogies tailored to varying levels of digital proficiency.

1.2. What will be the main results of this work package?

The main outcomes of this work package will be crucial in the development of educational materials for the DigComp framework and their integration into the DigIN Multi-pack Educational Programme.

This work package will enable the project consortium to design and develop the following outcomes, customized to the needs of its target groups, including educators, other adult education staff, and adult learners, thereby generating significant value for them. These outcomes are derived from both successful practices (as identified in desk research) and real-life requirements (gathered through surveys):

- Educators and trainers who engage with the work package will acquire new knowledge about instructional design methodologies and will have access to a toolbox of instruments for developing engaging educational programs, enhancing the quality of existing ones, and ensuring learners achieve their desired learning outcomes.
- The competence map for digital facilitators working with older adults, along with the toolbox of instruments, can be adapted and reused to suit learners' varying levels of understanding, both in online and offline education settings.

The Main Result: Digital Involvement and Skills Development Toolkit which spans 80-100 pages in English and comprises the following sections:

- Summary
- Chapter 1: Research Methodology
- Chapter 2: Collection of tools and instruments
- Chapter 3: Digital competence map
- Findings
- Recommendations
  Conclusions

2. Research Methodology
2.1. DigComp[1]

DigComp, or Digital Competence, is a set of skills that are necessary for success in the 21st century. It encompasses many different aspects of modern technology and its use in everyday life. The main points to consider when discussing DigComp are: understanding digital tools and technologies; using them safely, responsibly and effectively; creating content with appropriate digital media; collaborating online with others; and problem-solving through creative use of technology resources available on the internet.

The first point to consider is understanding digital tools and technologies. This includes knowing how computers work as well as being able to navigate different software programs such as word processors or spreadsheets. Additionally, it involves knowing how to access data from various sources such as websites or databases so one can find information quickly when needed for research purposes or other tasks requiring data analysis capabilities.

The second point focuses on using these tools safely, responsibly and effectively which means taking precautions against cyber-attacks by ensuring passwords remain secure while also abiding by copyright laws regarding downloading material off the internet without permission from authors/creators etc.. Furthermore, this involves being aware of potential risks associated with online activities like identity theft scams, phishing attempts etc., and making sure personal information remains private at all times. Finally, this entails learning effective strategies for managing time spent online since unmonitored usage can lead an individual down paths they may not have intended (such as wasting too much time playing video games).

Finally, individuals must learn how to create content digitally either through text documents, multimedia presentations etc., which requires practice & patience but ultimately allows users more control over what they produce compared to traditional methods like writing essays manually instead of typing them up electronically where corrections & changes can be made

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[1]   https://op.europa.eu/en/publication-detail/-/publication/50c53c01-abeb-11ec-83e1-01aa75ed71a1/language-en

quickly & easily if mistakes occur during editing process. Collaborating via social network sites provides opportunities to interact globally which further enhances user experience allowing users to become part of the global conversation rather than just isolated participants within their circle of friends/family members who share the same interests .. All these components combined make up DigComp thus providing people with essential skills needed to succeed in today's world filled with ever-changing technological advancements.

2.2.   Digital Education Action Plan (2021-2027)[2]

The Digital Education Action Plan (2021-2027) is a renewed European Union (EU) policy initiative that sets out a common vision of high-quality, inclusive and accessible digital education in Europe and aims to support the adaptation of the education and training systems of Member States to the digital age.

The Action Plan, adopted on 30 September 2020, is a call for greater cooperation at the European level on digital education to address the challenges and opportunities of the COVID-19 pandemic and to present opportunities for the education and training community (teachers, students), policymakers, academia and researchers on national, EU and international level.

The initiative contributes to the Commission's priority 'A Europe fit for the Digital Age' and Next Generation EU. It also supports the Recovery and Resilience Facility, which aims to create a greener, more digital and resilient European Union.

The Digital Education Action Plan is a key enabler to realising the vision of achieving a European Education Area by 2025. It contributes to achieving the goals of the European Skills Agenda, the European Social Pillar Action Plan and the '2030 Digital Compass: the European way for the Digital Decade'.

To inform the proposal, from July to September 2020, the Commission launched an open public consultation to gather the views and experiences of all citizens, institutions and organisations.

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[2] https://education.ec.europa.eu/focus-topics/digital-education/action-plan

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3. Collection of tools and instruments

Collection of tools and instruments related to digitalization for adult educators. Note that this list is not exhaustive and the actual tools and instruments may vary depending on the specific program or initiative.

3.1. Online platforms and learning management systems for adult education
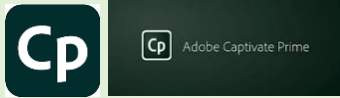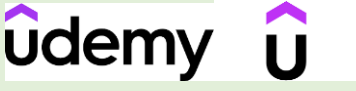
Online platforms and learning management systems in adult education are important areas for the development of education in the digital era. These tools help educational institutions, organizations and adult learners effectively plan, deliver and monitor learning processes. Here are some key aspects of these platforms and systems:

1. **Remote access and flexibility:** Online platforms enable adult learners to access learning materials and resources from anywhere and at any time. This means they can continue their learning regardless of location or schedule.
2. **Diversity of educational content**: These platforms often offer a wide range of content, such as video lessons, text-based materials, interactive exercises and tests. Learners can tailor their experience to suit their individual needs and learning styles.
3. **Personalization:** Advanced learning management systems use data and algorithms to tailor materials and lessons to learners' skills and progress. This allows for more effective learning.
4. **Progress monitoring**: These systems enable you to manage learning, track progress and assess learners' achievements. Teachers or instructors can adjust their teaching methods based on the results.
5. **Communication and cooperation**: Online platforms often offer tools for communication between students and instructors, and between students. This promotes interaction and cooperation, which can be important in the adult learning process.
6. **Availability and access to expert knowledge**: These platforms often allow access to specialized courses and knowledge that may be difficult to access in traditional educational institutions.
7. **Evaluation and certification:** These platforms can also provide examinations and assessments, which may lead to certificates or diplomas confirming acquired competencies.
8. **Corporate sector:** Learning management platforms and systems are also widely used in corporate training and professional development for adult employees.
9. **Continuing learning throughout life**: Adult education aims to enable individuals to develop their skills throughout their lives. Through these platforms, learners can adapt their learning to meet their changing needs and goals.

10. **Challenges and threats**: While online platforms and learning management systems offer many benefits, there are also challenges such as ensuring data privacy, combating fraud, and ensuring access to technology for people with varying levels of technical skill.

Overall, online platforms and learning management systems are playing an increasingly important role in adult education, enabling learners to have flexibility, personalization, and access to knowledge throughout their lives. There are many different online platforms and learning management systems that are used in adult education. Here are some examples:

Name	Description
Moodle	Moodle is a popular, open learning management system (LMS) that is widely used in adult education. It allows you to create online courses, access a variety of educational materials, monitor learners' progress, and interact between students and instructors.
edX	edX is an educational platform that offers online courses from leading universities and institutions around the world. For adult learners, this means access to courses at various levels of difficulty and subject areas, including advanced ones.
Adobe Captivate Prime	It is a tool for managing training and professional development in organizations. It allows you to deliver online training, monitor progress and evaluate participants' performance.
Khan Academy	Khan Academy focuses mainly on math and science and is available for free. It is an ideal place for people who want to improve their skills in mathematics, physics or computer science.
Udemy	Udemy is a platform where anyone can create and sell their online courses. This means there is a huge selection of courses in a variety of fields, including business, technology, art and many more.
LinkedIn Learning	This platform offers online courses in soft and hard skills that are useful in the career field. Learners can acquire certifications and skills at their own pace.
Coursera	Coursera is another popular learning platform that connects universities and companies to deliver online courses. It has a wide range of courses, including specializations and professional degrees, making it an attractive option for those seeking professional development.

Rosetta Stone	This platform specializes in learning foreign languages. It is useful for adults learning a new language for both personal and professional purposes.
Skillsoft	Skillsoft offers an educational platform focused on developing professional and technical skills. Provides online training and educational resources to employees and professionals in a variety of industries.
Google Classroom	Although initially created for classroom teaching, Google Classroom can also be used for adult education. It allows you to create courses, and share educational materials and virtual communication.

These examples show that there are many different online platforms and learning management systems available to adult learners, enabling them to tailor their learning to suit their needs and goals.

Online platforms and learning management systems (LMS) in adult education can be tailored to the needs of seniors to facilitate their access to online education. Below are the aspects that are important for seniors:

- **Simplicity and intuitiveness**: User interfaces should be simple and intuitive so that seniors can easily navigate the platform. Large buttons, clear fonts and clear navigation are key.
- **Technical assistance:** For seniors who may have technical difficulties, there is a need for access to technical support. Platforms should offer easy access to online help, instructions and the ability to contact technical support.
- **Tools tailored to your needs**: Educational platforms should provide a variety of tools that enable adapting materials to the needs of seniors. For example, the ability to change the font size or use speech reading.
- **Step-by-step education**: Platforms can offer step-by-step courses that introduce seniors to using technology, including computers, smartphones and apps.
- **Availability:** It is worth ensuring the accessibility of content so that it is readable and understandable to seniors with various needs, including people with visual or hearing impairments.
- **Social support:** Online communities can be created on the platforms where seniors can share their experiences, and questions and help each other.
- **Courses and content tailored to your interests**: The offer of courses and educational materials should take into account the diverse interests of seniors, such as history, culture, health, art, social sciences, etc.
- **Entertainment and culture**: In addition to learning, platforms can offer entertainment content such as online concerts, virtual tours, and music lessons.

- **Progress monitoring**: Learning management systems can offer tools to monitor learners' progress so that seniors can track their achievements and learning goals.
- **Data safety**: It is worth ensuring the security of seniors' data, especially if the platform requires registration and storage of personal information.
- **Personalization**: Platforms can provide content tailored to seniors' knowledge level and interests, which helps keep them engaged in the learning process.
- **Teacher training:** Teachers and instructors serving seniors on educational platforms should be trained in working with this age group.

Online platforms and learning management systems tailored to the needs of seniors can be a valuable means of accessing knowledge and social interaction, supporting the development of this age group and enabling active participation in lifelong education.

3.2.   e-Learning course development tools

Creating e-learning courses requires the use of various tools and software that enable the design, creation and delivery of online educational content. Creating e-learning courses is the process of designing, developing and delivering educational content using digital technologies, with remote learning in mind. Here are the steps and key elements of this process:

- **Defining educational goals**: The first step is to determine what you want to achieve with your e-learning course. Define the educational goals to be achieved by participants and the results you want to achieve.
- **Choosing a platform or tools:** You will then need to select the LMS (Learning Management System) platform or tools that will be used to deliver the course. This decision will impact how content is created and delivered.
- **Content design**: Design your course structure, including sections, modules and lessons. Determine what content will be included in each module and what tools, such as videos, presentations, quizzes, and text materials, will be used.
- **Content creation**: Start creating content including text, graphics, videos, animations and other educational materials. Remember to adapt the content to the educational goals and needs of the participants.
- **Interactions and activities:** Introduce interactive elements into your courses such as quizzes, tests, exercises, educational games, and discussion forums that encourage active participation and engagement.
- **Adapting to different learning styles:** Take into account the diversity of participants' learning styles. Some people prefer reading, others watching videos, and still others active exercise.
- **Testing and evaluation**: Test the course to make sure it works correctly and does not contain errors. Conduct trial activities to verify that participants can achieve learning goals.

- **Customization and improvement**: Adapt and improve your course based on testing and student feedback. It is a continuous process that allows us to improve the quality of the course.
- **Course implementation:** Once the course is ready, implement it on your chosen e-learning platform. Make sure participants have access to the necessary materials and tools.
- **Monitoring and analysis**: Track participants' progress, and monitor their engagement and performance. Use data analysis tools to assess course effectiveness.
- **Support and communication**: Provide participants with technical support and the opportunity to contact the instructor or moderator if they have questions or problems.
- **Evaluation and evaluation**: After completing the course, evaluate by collecting participants' feedback and analysing the results achieved. This will help you evaluate the success of the course and adjust it in the future.
- **Updates and development**: Online education is dynamic, so e-learning courses should be regularly updated and developed to remain relevant and attractive to participants.

Creating e-learning courses is a complex process that requires taking into account many factors, such as the educational goal, target audience and available tools. It is also worth striving to continuously improve courses to provide participants with valuable online education.

Here are some of the main tools for creating e-learning courses:

LMS (Learning Management System) platforms:
- **Moodle**: A multi-functional learning management system that allows you to create and deliver e-learning courses, monitor learner progress and manage learning content.
- **Canvas**: An LMS platform created by Instructure that is used by many universities and educational institutions to create online courses.

Content creation tools:
- **Articulate 360:** A suite of tools for creating interactive and multimedia e-learning courses, including Storyline for creating presentations and Rise for designing courses for various devices.
- **Adobe Captivate:** A professional tool for creating e-learning courses that allow you to create interactive and multimedia educational content.
- **Camtasia:** A video recording and editing tool that is often used to create video lessons and presentations for e-learning courses.

Graphic design tools:
- **Adobe Creative Cloud:** A set of graphics tools, such as Photoshop and Illustrator, for designing attractive and professional elements of e-learning courses, such as illustrations, graphics and presentations.

- **Canva**: Online tool for creating graphics, infographics and other visual materials that can be used in e-learning courses.

Video creation tools: :
- **Adobe Premiere Pro**: An advanced video editing tool that allows you to create high-quality video lessons and presentations.
- **Camtasia:** In addition to screen recording, Camtasia allows you to edit and edit videos and add interactive elements.

Animation tools:
- **Powtoon**: An animation creation tool that can be used to create animated e-learning courses.
- **Vyond** (formerly GoAnimate): Allows you to create video animations simply.

Tools for creating quizzes and tests:
- **Quizlet**: A platform for creating interactive quizzes, flashcards and other learning tools.
- **ProProfs:** A tool for creating online tests, quizzes and surveys that can be integrated with e-learning courses.

Analysis and monitoring tools:
- **Google Analytics:** It allows you to monitor traffic on e-learning course websites and analyse participant data.
- **xAPI (Experience API):** A standard for tracking the activity of e-learning course participants, which allows for collecting data on their progress and behaviour.

These tools are just part of the rich ecosystem of available solutions for creating e-learning courses. The choice of a specific tool depends on the project's needs, level of advancement and available resources.

3.3. Digital resources and materials for adult learners

Digital resources and materials for adult learners are a key element of adult education, enabling access to knowledge, developing skills and excelling in various areas. Here are some examples of the types of digital resources and materials available to adult learners:

- **E-learning courses**: Online courses offer a wide range of topics, from academic subjects to professional skills. They may include video lessons, text-based materials, interactive exercises and quizzes. Examples include courses on educational platforms such as Coursera, edX, LinkedIn Learning and many others.
- **Video educational materials**: Videos are an effective form of knowledge transfer. Adult learners can use platforms like YouTube, Khan Academy, TED Talks, and others to access video lessons, lectures, and instructional materials on a variety of topics.
- **E-books and text materials**: E-books and text materials available in digital form facilitate access to books and articles in various fields. Popular platforms to purchase

or download e-books for free include Amazon Kindle, Project Gutenberg, and many others.

- **Language courses and mobile applications**: For adult language learners, many mobile apps such as Duolingo, Rosetta Stone and Memrise offer interactive and mobile language courses.
- **Social media platforms and discussion groups**: Many online communities, such as Reddit and Quora, have discussion groups dedicated to various topics. Participants can ask questions, provide answers and participate in discussions about their interests and passions.
- **Tools for self-education**: These are apps and websites that allow adult learners to develop specific skills such as programming, graphic design, project management, etc. Examples include Codecademy, Khan Academy, Adobe Creative Cloud and many others.
- **On-demand online course platforms**: Some platforms offer access to recordings of online lectures and courses that you can watch at any time. Examples include Udemy, LinkedIn Learning, and Skillshare.
- **Project management and organization tools**: Apps and tools like Trello, Asana, and Evernote help adult learners organize their tasks, design schedules, and track their learning progress.
- **Databases and information sources:** For people researching specific topics, access to scientific databases, such as PubMed or IEEE Xplore, and digital libraries may be necessary to conduct research and obtain reliable sources of information.
- **Podcasts and audiobooks**: Access to educational podcasts and audiobooks allows you to learn anywhere and anytime. They are available on many platforms such as Audible, Spotify and Apple Podcasts.

These digital resources and materials for adult learners offer a wide range of learning opportunities to suit a variety of learning styles and needs. They give adult learners flexibility and freedom in choosing how to acquire knowledge and skills.

Digital resources and materials are an important element of support for seniors, enabling them to access information, entertainment, education and interaction online. Here are some examples of digital resources that are especially useful for seniors:

- **Websites and information portals**: For seniors who want to stay up to date with events and information, access to news, articles and information from around the world is invaluable. BBC News, CNN or local news websites can provide up-to-date news.
- **Language learning apps:** Seniors can use language learning apps like Duolingo, Babbel, and Rosetta Stone to improve their language skills and discover new cultures.
- **Online discussion clubs**: Seniors can join online discussion clubs where they can discuss their favourite books, movies or passions. This allows you to interact with others and share your thoughts.

- **Educational websites and portals**: For seniors who want to continue their education, there are educational sites such as Coursera, edX, Khan Academy, and LinkedIn Learning that offer online courses on a variety of topics.
- **E-books and audiobooks**: For people with limited vision or mobility, e-books and audiobooks are an excellent alternative to traditional books. They can be digitally available and easily accessible on multiple devices.
- **Social media platforms**: Seniors can use social media such as Facebook and Instagram to stay connected with family and friends and share their life experiences.
- **Health apps**: For health-conscious seniors, there are apps available to monitor health parameters such as blood pressure and blood sugar levels.
- **Online entertainment**: For entertainment, seniors can use platforms to watch movies and series, such as Netflix or Amazon Prime Video, as well as listen to music on streaming platforms, such as Spotify or Apple Music.
- **Training courses**: For seniors who want to develop their skills, online courses on using computers, smartphones and applications are available.
- **Telemedicine and telecare**: Seniors can use telemedicine services to consult with doctors online, as well as telecare, which allows them to monitor their health and provide support with daily activities.

It is worth noting that many non-profit organizations and government institutions offer support and training for seniors in the use of new technologies. Thanks to them, seniors can more easily adapt to the digital world and benefit from it.

3.4. Virtual and augmented reality tools for adult education

Virtual and augmented reality (VR and AR) tools are becoming more widely used in adult education, enabling more interactive and engaging learning experiences. Here are some examples of VR and AR tools in adult education:

- **Language learning applications in VR/AR:** Apps like Mondly VR allow adult language learners to step into a virtual environment where they can practice speaking and understanding the language in realistic situations.
- **Medical simulations in VR:** Virtual medical simulations, such as Osso VR and Touch Surgery, allow adult medical students to practice various medical procedures and surgeries in a safe virtual environment.
- **Vocational training in AR:** Industries such as industry, building maintenance and manufacturing use AR to provide employees with live instructions and guidance, for example when repairing machinery or maintaining equipment.
- **Virtual tours and explorations:** Examples include Google Expeditions VR, which allows for virtual tours around the world, and AR applications, which enable exploration of local monuments and cultural sites.

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- **Defence training in VR**: The military and police services use VR for tactical and situational training, which allows them to practice in various scenarios without risking their lives.
- **Interpersonal skills training in** VR: For jobs that require interpersonal skills, such as job interviews or customer service training, there are VR tools available that allow you to practice and develop these skills.
- **History and culture courses in VR/AR**: VR and AR tools bring history and culture to life by creating interactive lessons and visualizations that help adult learners better understand topics.
- **Design and engineering in VR:** For students and professionals in design and engineering, VR tools allow them to create and analyse 3D models and prototypes more realistically.
- **Financial education courses in VR**: VR tools are also available to help adult learners better understand financial management principles through visualization and interactive simulations.
- **AR in museums and art galleries:** Museum exhibitions and art galleries use AR to provide additional information and experiences to visitors, allowing for a more engaged and interactive visit.

VR and AR tools enable the creation of more engaging, interactive and realistic learning experiences for adult learners. Thanks to these technologies, participants can improve their skills, deepen their knowledge and develop in various fields.

Virtual reality (VR) and augmented reality (AR) tools can also be used in the context of seniors, for both educational and entertainment purposes. Here are some examples of how these technologies can positively impact the lives of seniors:

- **Therapies and rehabilitation**: VR can be used in rehabilitation therapies for seniors, helping them maintain physical and mental fitness. Thanks to virtual exercises and movement simulations, you can stimulate your muscles, coordination and balance.
- **Mental training**: VR and AR apps can provide games and activities that help seniors keep their minds sharp. Solving puzzles, logic games and memory tasks in a virtual environment can support cognitive functions.
- **Travel in time and space**: Seniors who cannot travel due to health restrictions can use VR to visit distant places, museums, or even places from the past. This allows you to revive memories and provide cultural education.
- **Social support**: VR can help seniors maintain social connections, especially if they live far from family and friends. Meetings in a virtual environment or online games allow you to interact and communicate with others.
- **Education and self-education**: Seniors can use educational applications in VR or AR to learn new skills, such as programming, learning foreign languages or learning to play a musical instrument.

- **Sound and music therapy**: VR can be used in music and sound therapies. Seniors can explore different sounds and instruments in a virtual environment, which can be therapeutic and relaxing.
- **Occupational therapy:** VR can be used as an occupational therapy tool, supporting seniors in improving manual skills such as sewing, drawing or crafting.
- **Entertainment and recreation**: For seniors who like entertainment, there are VR games and applications for watching movies and concerts in a virtual environment.
- **Remote training**: Seniors can participate in remote training and courses using VR, which allows them to develop their interests and competencies, regardless of where they live.
- **Family entertainment**: VR can also be used to provide seniors with great shared experiences with family and grandchildren, for example by playing virtual games together.

It is worth noting that VR and AR technologies can be adapted to the needs of seniors, taking into account their skills and limitations. These are tools that not only provide education and therapy but also improve the quality of life of seniors through interaction, entertainment and exploration.

3.5.　Digital assessment and evaluation tools

Digital assessment and evaluation tools are technologies and tools used to collect, analyze and interpret data about performance or progress in education, work or other fields. Digital assessment allows for more precise monitoring of achievements and assessment of the effectiveness of activities. Here are some key elements and tools related to digital assessment:

- **Electronic spreadsheets**: Tools such as Microsoft Excel or Google Sheets allow you to collect and analyse numerical data such as test scores, grades, and statistics.
- **Student management software**: Student Information Systems (SIS) allow you to track information about students, their progress, grades and attendance.
- **Educational platforms:** Learning Management Systems (LMS) provide tools for creating, tracking, and grading online assignments, tests, and quizzes.
- **Survey and feedback software**: Tools like SurveyMonkey allow you to create surveys and collect feedback and data from participants to assess the quality of courses and other learning activities.
- **Work assessment tools:** In corporate environments, employee assessment tools such as HR applications help monitor performance, goals and career progress.
- **Automatic assessment systems**: In education, these systems use algorithms to automatically grade tests, papers and assignments, allowing for faster and more objective assessment.

- **E-portfolios**: These are electronic portfolios that enable learners and employees to store and present their achievements, projects and work.
- **Data analysis tools**: Data analysis programs and tools such as Tableau and Power BI help interpret large amounts of information and create reports.
- **360-degree assessment systems:** In corporations, these systems allow collecting opinions about an employee from co-workers, superiors and subordinates to conduct a comprehensive assessment.
- **Soft skills assessment tools**: Self- or peer-assessment tools can be used to assess soft skills such as interpersonal skills, communication and time management.

Digital assessment and evaluation tools enable you to more accurately and effectively monitor progress, assess the effectiveness of activities and make data-driven decisions. They help improve educational processes, and employee management, assess the quality and effectiveness of activities, and provide feedback that can be used to improve results and achievements.

3.6. Digital literacy and digital skills training resources

Digital skills and digital skills training resources are essential to meet the demands of a modern world where technology plays an increasingly important role. Here are some examples of available educational resources:

- **Online courses:** Online courses available on learning platforms such as Coursera, edX, LinkedIn Learning and Udemy offer a wide range of digital skills courses. Topics include programming, data analysis, graphic design, online marketing, project management and much more.
- **Online libraries**: Many universities and educational institutions have online libraries where you can find educational materials, reports, articles and other sources of information about digital skills.
- **Platforms for learning programming languages**: For those interested in programming, many platforms such as Codecademy, freeCodeCamp, and Khan Academy offer free materials and interactive exercises.
- **Government courses and materials:** In some countries, governments provide free courses and materials on digital skills. An example would be "Digital Skills" from the UK government.
- **Podcasts and video channels**: Podcasts and video channels on platforms such as YouTube or iTunes can provide valuable information about digital skills, including guides and interviews with experts.
- **Electronic books**: Digital literacy e-books are available from online stores such as Amazon Kindle and Google Books. These may include instructional materials, guides and case studies.

- **Self-education courses:** For people who prefer to learn on their own, there are self-learning tools such as Khan Academy or MIT OpenCourseWare that allow access to educational materials without the need for formal registration.
- **Campaigns and social initiatives**: Various organizations and foundations are campaigning to promote digital skills by offering free educational materials. An example would be Google Digital Garage.
- **Local courses:** In some communities, free digital skills courses and workshops are available from local institutions, libraries or community groups.
- **Discussion forums and online communities**: For people who want to get help and advice from other learners or experts, discussion forums like Stack Overflow or Reddit are valuable sources of information.
- **Tools for practice and projects:** Access to practice and project creation tools, such as GitHub and Jupyter Notebook, is important for people developing programming and analytical skills.

It's worth noting that many of these resources offer free material, meaning digital skills are accessible to a wide range of people, regardless of their experience level or budget. Thanks to these resources, everyone can develop their digital skills and be more competitive in the labour market and a more competent user of modern technologies.

3.7. Webinars and online professional development opportunities for adult educators

Webinars and online professional development opportunities provide an excellent means for adult educators who want to expand their competencies, follow the latest trends in education and improve their teaching skills. Here are some examples of what opportunities online development offers for adult educators:

- **Webinars and online training**: There are numerous platforms offering webinars and online training specifically for teachers and adult educators. These training courses cover a variety of topics, from teaching techniques to group management.
- **Courses on educational platforms**: Educational platforms such as Coursera, edX, Udemy and LinkedIn Learning offer a wide range of courses for teachers and educators. There you can find courses on pedagogy, classroom management, e-learning and much more.
- **self-study materials**: There are also free self-study materials such as articles, e-books and textbooks that you can find online and use to advance in the field of adult education.
- **E-learning training**: As technology becomes an increasingly important tool in adult education, training in creating e-learning courses and using learning platforms is extremely useful for educators.

- **Online learning communities**: Discussion groups, forums and online communities for teachers and adult educators provide a place to share experiences, discuss problems and gain new ideas.
- **Online conferences and events**: Virtual conferences and educational events are a great way to gain new knowledge and connect with other educators. More and more conferences are moving online.
- **E-portfolio and course design**: The ability to create your e-portfolio and design your online courses is an excellent tool for developing and improving your teaching skills.
- **Certification programs:** Some organizations offer certification programs for teachers and adult educators that confirm their competence in a given field.
- **Training in communication and interpersonal skills**: Interpersonal skills are extremely important in teaching adults. Therefore, it is worth looking for training that will help develop these competencies.
- **Self-assessment and career planning**: You can find skills self-assessment and career planning tools online to help you define your career development goals.

Online professional development is accessible and flexible, allowing teachers and adult educators to tailor learning to their schedules and needs. It is also a way to stay up to date with the latest trends in education and better prepare for the challenges of teaching adults.

3.8.   Digital collaboration and communication tools

Digital collaboration and communication tools play a key role in today's world, especially in remote work, online education and effective project management. Here are some popular tools that enable effective communication

 and collaboration online:

Microsoft Teams	It is a communication and collaboration platform that integrates with the Microsoft 365 package. It allows for videoconferencing, exchanging messages, sharing documents and collaborating in real-time.
Slack	Slack is a tool for internal communication in the form of a chat. It allows you to create thematic channels, share files and integrate with other applications, which facilitates team collaboration.
Zoom	Zoom is a popular video conferencing platform that allows you to organize online meetings, webinars and training. Thanks to screen sharing and participant placement functions, it facilitates real-time communication.

Google Workspace (formerly G Suite):	Google Workspace is a set of online tools such as Gmail, Google Drive, Google Meet and Google Docs. It enables effective collaboration and document sharing in real-time.
Trello	Trello is a project management tool based on the concept of a kanban board. It allows you to create task lists, assign tasks to team members and monitor progress.
Asana	Asana is a project management platform that helps you plan, track and execute tasks. It allows you to coordinate teamwork and monitor project progress.
Notion	Notion is a documentation, note-taking and project management tool. It allows you to create personalized websites that integrate different types of content.
Jira	Jira is a tool created for project management and task tracking, especially in the IT industry. It allows you to create tasks, report errors and monitor work progress.
Basecamp	Basecamp is a project management and team communication tool. It allows you to create projects, schedule tasks and collaborate on documents.
Discord	Discord is a voice and text communication platform that is especially popular in gaming communities but can also be used for team communication.
Skype for Business	Skype for Business (now part of Microsoft Teams): Skype for Business allows you to conduct videoconferencing, voice calls and exchange messages. It is mainly used in a business context.
Podio	Podio is a project management and communication tool that allows you to tailor your workflow to your team's needs.

These tools enable effective communication, workflow, and collaboration online, whether you're working remotely, learning online, or managing a project. The choice of a specific tool depends on the needs and preferences of your team and the type of work you do. Digital collaboration and communication tools can benefit seniors by helping them stay connected with family and friends, provide information, develop skills and make everyday life easier. Here are the benefits and challenges seniors may encounter when using these tools:

Benefits:

- **Communication with family and friends**: Seniors can maintain regular contact with loved ones, especially if they live far from each other. Tools such as Skype, WhatsApp, and Zoom enable videoconferencing and voice calls.
- **Making everyday life easier**: Mobile apps and online tools can help seniors with everyday activities such as online shopping, checking the weather forecast, and using GPS navigation.
- **Education and entertainment**: For seniors who are interested in learning and entertainment, there are educational platforms, e-books, audiobooks and websites with interesting content.
- **Health support**: Health tracking apps and devices such as smartwatches can help you track your health parameters and remind you to take your medications.
- **Online community**: Seniors can join online communities with common interests, such as message boards, Facebook groups, and hobby websites.
- **Self-assessment and skill development:** Seniors can participate in online courses and webinars, developing their skills and gaining new knowledge.
- **Finance management:** Financial management apps allow you to monitor your expenses, make online payments, and track your account balance.

Challenges:

- **Technical difficulties**: Seniors may encounter difficulties in using new technologies such as smartphones and computers. It is important to provide them with technical support and education.
- **online security**: Seniors may be more susceptible to online scams and online security risks. It is worth educating them about the dangers and being careful on the Internet.
- **No internet access**: Not all seniors have access to a stable internet connection, which may be an obstacle to using digital tools.
- **Resistance to change:** Some seniors may resist change and be attached to traditional methods of communication and entertainment, which can make it difficult to introduce new technologies.
- **Vision and hearing problems**: Seniors with vision or hearing problems may need special tools such as magnifying fonts, read-aloud programs, or hearing aids to use digital tools.

To help seniors use digital collaboration and communication tools, it is important to adapt these tools to their needs and enable them to learn and access technical support. With the right approach, seniors can benefit from new technologies and remain integrated into the digital society.

3.9.   Online networks and communities for adult educators

Online networks and communities for adult educators are platforms where teachers and instructors can share knowledge, and experience and create networks with other professionals in the field of adult education. Here are some examples of such networks and communities:

LinkedIn	LinkedIn is the largest professional social platform where adult educators can create their professional profiles, share content, join thematic groups and connect with other educators.
Ning	Ning is a platform that allows you to create your online communities on specific topics. Adult educators can create their community or join existing ones to exchange information and experience.
Edutopia	Edutopia is a website and online community focused on innovation in education. Provides access to articles, videos and tools that may be useful to adult educators.
Teachers Pay Teachers	It is a platform where teachers can sell and buy teaching materials. It's a great place to share lesson ideas and get inspired.
Facebook Groups	There are numerous Facebook groups dedicated to adult educators. Teachers can join groups based on their thematic interests and participate in discussions.
Twitter	Twitter is a platform where you can follow teachers and experts in the field of adult education, participate in discussions about the latest trends and share interesting content.
Adult Education Forum	This is an online forum focusing on adult education, where teachers and instructors can ask questions, provide answers and exchange experiences.
Google+ Communities	Google+ offers many online communities, including those related to adult education. Although Google+ has been closed, some communities may continue to operate on other platforms.
Reddit	Reddit has many subsections related to education, including adult education. This is a good place to ask and answer questions about various aspects of adult learning.
Udemy for Instructors	If you teach online courses, Udemy offers a community of instructors where you can share knowledge about creating and managing courses.

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Pinterest	Adult educators can use Pinterest to find inspiration and ideas for teaching materials and lesson organization.

These online communities offer adult educators the opportunity to learn, share experiences, gain inspiration and connect with other education professionals. Choosing the right community depends on the individual needs and interests of each educator.

3.10. Digital storytelling tools

Digital storytelling tools are applications and platforms that enable you to create, edit, and share narrative content in a variety of forms, including text, visual, audio, and interactive. Here are some examples of such tools:

- **StoryMapJS: StoryMapJS is** a tool created by Knight Lab that allows you to create interactive narrative maps. Users can add points on the map, describe them in text and add multimedia, creating coherent geographical stories.
- **Canva: Canva** is a graphic design platform that offers many templates for creating illustrated stories, infographics, presentations and other visual materials.
- **Twine: Twine** is a tool for creating text-based games and interactive stories. It is often used by writers to create adventure games and stories that players choose.
- **Scrivener: Scrivener** is a tool for writing and organizing long documents such as novels and short stories. It allows you to create a narrative structure, store notes, and control the writing process.
- **Storybird: Storybird** is a platform that allows you to create stories in the form of pictures and illustrations. Users can select illustrations and create texts, which helps develop creativity.
- **Padlet: Padlet** is a tool for creating interactive whiteboards on which you can place a variety of content, including text, images, videos and sounds, to tell a story or present ideas.
- **Soundtrap: Soundtrap is** an online music creation and editing platform. It can be used to add soundtracks to audiovisual stories or create podcasts.
- **Adobe Spark**: Adobe Spark offers tools for creating interactive stories in the form of videos, presentations or websites. It allows you to add text, images, video and audio.
- **Audacity: Audacity** is a free audio editor that you can use to record and edit audio narration for stories or podcasts.
- **StoryMapJS: StoryMapJS** is a tool for creating interactive narrative maps. It allows you to add points on the map and describe them in the context of a narrative.
- **Storytelling with Data**: This is a book and website by Cole Nussbaumer Knaflic that helps you learn and understand how to tell stories with data and visualization.
- **Rise: Rise** is a tool for creating interactive e-learning modules that can be used for narration and storytelling for educational purposes.

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These tools allow you to create various forms of narrative and stories, both for entertainment, educational and business purposes. Choosing the right tool depends on the type of story you want to tell and your preferences regarding content and form.

Storytelling (the art of telling stories) plays an important role in the education of seniors, helping to transfer knowledge, building social bonds and encouraging active participation in the learning process. Here's how storytelling can be used in senior education:

- **Passing on life experiences**: Seniors often have rich life experiences and knowledge that they can pass on to younger generations. By telling stories from their lives, they can not only teach valuable lessons but also preserve their memories.
- **Motivating to learn:** Stories can be used to create an interesting and engaging context for educational materials. Stories inspire, stimulate curiosity and motivate seniors to learn new things.
- **Supporting the learning process**: Introducing narrative into the teaching process can help improve understanding and learning of content. Stories allow you to understand abstract concepts and connect them to specific situations.
- **Creating social bonds**: Groups of seniors can create stories together, which strengthens interpersonal bonds and develops social skills. Creating stories together creates an opportunity to share experiences and helps build community.
- **Developing communication skills**: Storytelling can help seniors develop communication skills, both verbal and written. They can practice expressing their thoughts and feelings and build their vocabulary.
- **Treatment and therapy**: Storytelling can be used as a form of therapy, especially for seniors who are experiencing emotional difficulties or trauma. Narrative therapy can help you process difficult experiences.
- **Keeping your brain active**: Creating and telling stories requires intellectual activity and creativity. This is a great way to keep seniors' brains active.
- **Creating educational materials**: Seniors can be involved in creating educational materials such as audiobooks, videos or presentations that can be used in the learning process by others.

An example of a project using storytelling in the education of seniors may be collecting their memories and life stories and then creating collective narratives or artistic projects from them that can be shared with others. Storytelling becomes a tool for building identity, learning, creating social bonds and transmitting cultural heritage.

3.11. Interactive and multimedia resources for adult learners

Interactive and multimedia resources are a great way to engage adult learners and facilitate the learning process. Here are some examples of such resources that are useful for adult learners:

- **e-learning platforms**: The likes of Coursera, edX, Udemy, and LinkedIn Learning offer a wide selection of online courses that include video lessons, interactive exercises, and progress assessments.
- **Webinars and videoconferencing:** Webinars and videoconferencing enable adult participants to participate in online presentations and discussions, allowing them to interact with the presenter and other participants.
- **E-books and audiobooks**: Digital books and audiobooks allow you to study anywhere, anytime, without having to carry physical books.
- **Educational podcasts**: Podcasts are easy to access and allow you to learn while travelling, exercising, or doing other daily activities.
- **Educational games**: Computer and mobile games can be used to learn a variety of skills, from learning foreign languages to math and science.
- **Interactive math platforms**: For adults learning math, platforms like Khan Academy offer math lessons and exercises in the form of games and interactive activities.
- **Platforms for learning foreign languages**: Mobile apps like Duolingo and Rosetta Stone allow adult students to learn foreign languages through interactive exercises and games.
- **Simulators and virtual laboratories**: In natural sciences and engineering, virtual simulators and laboratories allow experimenting and learning without physical risk.
- **Educational social media platforms**: On platforms like LinkedIn Groups and Reddit's r/AskScience, adult learners can ask questions, share knowledge, and engage in discussions with subject matter experts.
- **Video courses on YouTube**: Many educational YouTube channels offer free lessons and guides on a variety of topics.
- News and educational portals: Websites such as National Geographic, TED, and the Smithsonian Institution offer interactive educational content on a variety of topics.
- **Time management and organization apps**: Apps like Evernote and Trello can help adult students plan their learning and organize materials.
- **Scientific databases**: For those who conduct research or need access to scientific sources of information, scientific databases such as PubMed and IEEE Xplore are invaluable resources.

These interactive and multimedia resources are available online and allow adult learners to tailor their learning to their needs, pace and learning style. Thanks to them, learning becomes more accessible, attractive and effective.

Here are some examples of interactive and multimedia resources that are useful for adult learners in various fields:

- **Coursera: Coursera** is an e-learning platform where you can find courses on various topics conducted by renowned universities and institutions. The offer includes both free and paid courses.
- **edX**: Like Coursera, edX offers access to online courses from universities around the world. You can also earn certificates or degrees by completing a course.

- **Khan Academy**: Khan Academy is an educational platform that offers free lessons in mathematics, science, computer science, economics and other fields. It also includes tools to track student progress.
- **Duolingo:** Duolingo is a popular application for learning foreign languages. Students can learn new languages through interactive exercises and games.
- **Codecademy:** For those interested in programming, Codecademy offers online courses in programming, web development, and data analysis.
- **Rosetta Stone**: Rosetta Stone is a famous platform for learning foreign languages. It offers interactive lessons, including pronunciation and listening exercises.
- **TED-Ed: TED-Ed** is an educational platform based on famous TED talks. It includes video lessons and exercises that can be adapted to the student's needs.
- **MIT OpenCourseWare**: The Massachusetts Institute of Technology (MIT) makes its course materials available online for free. It is an excellent source of knowledge on various topics.
- **YouTube Learning**: Many educational channels on YouTube offer interesting lessons on various topics. Examples include "CrashCourse", "Vsauce", "SmarterEveryDay" and many others.
- **National Geographic Learning**: National Geographic Learning offers educational resources in science, geography and culture. Multimedia materials, textbooks and educational games are available.
- **Quizzles**t: Quizlet is a platform that allows you to create and share flashcards and tests for learning various subjects.
- **LinkedIn Learning**: LinkedIn Learning (formerly Lynda.com) offers courses and tutorials on professional skills, management and personal development.
- **Google Arts & Culture**: This platform allows you to explore art, culture and history through interactive exhibits and virtual tours.

These interactive and multimedia resources provide a valuable resource and enable adult learners to tailor learning to their needs and preferences. It is worth choosing resources that best suit your educational goals and learning style.

3.12. Online resources for the recognition of prior learning

Prior Learning Assessment (PLA) is a process that allows individuals to document and receive recognition for their prior learning experiences and achievements. There are various online resources to help with this process. Here are some examples of such resources:

- **American Council on Education (ACE) Credit**: ACE offers an online tool that allows individuals to assess whether their prior educational achievements may qualify for academic credit using their National Guide to College Credit for Workforce Training.

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- **Council for Adult and Experiential Learning (CAEL)**: CAEL is an organization specializing in the recognition of prior learning. Their website has a lot of useful tools and information on this topic.
- **College Board CLEP (College-Level Examination Program)**: The College Board offers CLEP testing, which allows adults to earn academic credit for knowledge acquired outside of traditional classrooms.
- **Portfolio Assessment Tools**: Many universities and educational organizations offer online tools and guides that help you create learning portfolios that can be presented as evidence of prior learning.
- **eCampusOntario PLAR Toolkit**: This is a tool created by eCampusOntario that helps people navigate the recognition of prior learning processes and prepare their learning portfolio.
- **US Department of Labor's CareerOneStop**: This site offers a wealth of information about the various recognition options for prior learning, including resources related to available programs and tests.
- **University and college websites**: Many colleges and universities have information on their websites about the PLA process, requirements and procedures for obtaining recognition for prior experience and education.
- **Self-assessment tools**: There are self-assessment tools available online to help people determine whether they are candidates for recognition of prior learning. Such tools help to understand what competencies and achievements can be recognized.
- **Online survey and forum**: Many adult students and professionals share their experiences and tips on recognizing prior learning in discussion forums and online communities.

Recognition of prior learning is an important tool that allows adults to accelerate their education or gain recognition for the knowledge and experience they have acquired. Accessing these online resources makes the process easier and allows you to learn more about your options.

3.13. Mobile learning applications for adult education

Mobile learning apps for adult education are tools that enable adult students to learn and develop skills on their smartphones or tablets. Here are some examples of such applications and their functions:

Duolingo:	Goal: Learning foreign languages. Features: Interactive lessons, pronunciation exercises, tests, word games.
Coursera:	Goal: Access to online courses from renowned universities and institutions.

	Features: Video lessons, exercises, tests, and access to course materials.
edX:	Purpose: Online courses provided by universities and educational institutions. Features: Video lessons, notes, discussion forum, course completion certificates.
LinkedIn Learning:	Goal: Developing professional and personal skills. Features: Video courses, practical exercises, ability to build a professional profile.
Khan Academy: :	Purpose: Learning mathematics, natural sciences and other subjects. Features: Video lessons, exercises, tests, progress statistics.
Udemy:	Purpose: Courses on a variety of topics including job skills, hobbies, health, and more. Features: Video lessons, downloadable materials, ability to purchase courses.
Rosetta Stone:	Goal: Learning foreign languages. Features: Pronunciation lessons, vocabulary exercises, tests, conversations.
Quizlet:	Purpose: Creating and sharing flashcards and tests for learning various subjects. Features: Ability to create your flashcards, access to hundreds of ready-made flashcards.
TED:	Goal: Access to inspiring and educational speeches by experts on various topics. Features: Video of speeches, access to the entire TED Talks library.
MyFitnessPal:	Purpose: Monitoring diet and physical activity. Features: Food database, calorie tracking, workouts.
Tandem Language Exchange:	Goal: Learning foreign languages through conversations with native speakers. Features: Ability to find a study partner and chat online.
Peak:	Goal: Developing mental skills such as memory and concentration. Features: Games and exercises, daily challenges.
Goodreads:	Goal: Keep track of books you've read and discover new ones. Features: Ratings, reviews, list of read and wanted books.
Fitbit:	Purpose: Monitoring health and physical activity. Features: Track steps, heart rate, sleep, and other health statistics.
Notice:	Purpose: Organizing tasks, notes and projects. Features: Creating and editing documents, knowledge base, project planning. Adult learning apps often offer a variety of learning tools and materials that allow you to tailor learning to your individual needs and learning style. Additionally, many of these apps allow you to learn anywhere, anytime, which is especially beneficial for adult learners who lead active lifestyles. Mobile educational applications are also available and useful for seniors, helping them develop skills, remain intellectually active and

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	stay up to date with fields of interest. Here are some examples of mobile learning apps that are suitable for seniors:
Lumosity:	Goal: Develop cognitive skills such as memory, concentration and logical thinking. Features: Brain games and exercises, progress tracking.
Elevate:	Goal: Strengthening communication, math and cognitive skills. Features: Daily tasks, and progress reports.
AARP Now:	Purpose: Source of information and resources for older people. Features: News, articles, retirement calculators.
Audible:	Purpose: Listening to audiobooks and podcasts. Features: Rich audiobook library, ability to adjust playback speed.
Skype:	Purpose: Video and voice communication with family and friends. Features: Video conferencing, text calling.
Kindle:	Purpose: Reading e-books. Features: Access to a huge e-book library, and font customization.
Piano Academy:	Goal: Learning to play the piano. Features: Piano lessons, games and exercises.
epic! - Kids' Books and Videos:	Goal: Access to children's books and educational content. Features: Large book library, audiobooks, videos.
Calm:	Purpose: Meditation and relaxation. Features: Meditation programs, nature sounds, relaxation content.
Words with Friends:	Goal: A word game similar to Scrabble. Features: Play with other users, and learn new words.
iBooks:	Goal: Reading e-books on Apple devices. Features: Access to the e-book store, ability to save notes.
PeakFinder AR:	Objective: Recognize the mountains and mountain peaks in the area. Features: Uses augmented reality to identify mountains on the horizon.
Fit Brains Trainer:	Goal: Developing brain skills such as memory and logical thinking. Features: Games and exercises, progress statistics.
Weather Underground:	Purpose: To provide accurate weather forecasts. Features: Weather maps, weather alerts.
Khan Academy Kids:	Purpose: Preschool and early school education. Features: Games and exercises, educational videos. These educational apps for seniors help them develop skills, stay mentally active, and enjoy learning and interacting with technology. Additionally, many of these apps are available for free or offer free trials, making them accessible to a wide range of users.

3.14. Tools for the measurement of digital learning outcomes

Digital learning measurement tools are software and applications that help collect, analyze and evaluate students' performance and progress in online learning. Here are some popular tools for measuring digital learning outcomes:

- **Learning Management System (LMS):** Examples: Moodle, Blackboard, Canvas. Features: LMSs allow you to track student activity, grade tests, manage learning materials, and generate progress reports.
- **Google Analytics for Education:** Google Analytics allows you to track user behaviour on educational websites, analyse traffic and identify trends.
- **Quizlet:** In addition to creating flashcards and tests, Quizlet offers reports on student performance, allowing you to monitor progress on an ongoing basis.
- **Edpuzzle:** allows you to track which parts of the video students watch, how much time they spend learning and what answers they choose during questions.
- **Google Forms:** allows you to create questionnaires and surveys that can be used to collect student opinions and evaluate learning outcomes.
- **Socrative:** offers tools for creating interactive quizzes, polls and tests, as well as live analysis of results.
- **Nearpod:** allows you to create interactive presentations and quizzes and monitor students' progress in real-time.
- **Turnitin:** is a tool for checking the originality of content, but also for tracking student progress and providing feedback.
- **Kahoot!:** offers interactive quizzes and educational games, and allows you to track student performance.
- **Padlet:** allows you to create an online pinboard where students can share their projects and ideas and teachers can track progress.
- **Classcraft:** is a gamification tool that allows you to track students' progress about goals and tasks assigned by the teacher.
- **TableauPublic:** is a tool for creating interactive data visualizations that can help you analyse learning outcomes.
- **Power BI: Vol**o is a tool for creating advanced reports and data visualizations that can be used to analyse students' progress.

These tools help teachers and instructors monitor student progress, providing valuable data for assessing learning outcomes and adapting learning to meet student needs. They can also provide students with additional help and support in places where they may encounter difficulties.

Tools for measuring digital learning outcomes in the context of seniors can be adapted to the specific needs and skills of this age group. Here are examples of learning outcomes measurement tools that can be used with seniors:

- **EasyLMS:** This is a simple tool for creating online tests and quizzes. It can be adapted to the skills and needs of seniors, and the results can be available in the form of clear reports.

- **Google Forms**: is an easy-to-use tool for creating surveys and questionnaires. It can be used to collect seniors' opinions on the quality of courses and training.
- **SurveyMonkey**: is a platform for creating advanced online surveys. It is useful for collecting detailed feedback from seniors about their learning experiences.
- **Analytics in online courses**: The e-learning platform can use built-in analysis tools that allow you to track seniors' progress, such as average test scores, time spent in lessons and number of modules completed.
- **Educational games and applications with built-in reports:** Examples: Educational apps like Lumosity or Peak offer games and activities that help seniors developmental skills. These apps often offer progress reports and statistics.
- **Real-time polls and assessments during online classes**: During online classes, seniors can take part in interactive polls or quizzes, which allows teachers to constantly assess their understanding of the material.
- **Educational social media platforms**: Examples: Facebook groups or discussion forums in online courses allow teachers to gather feedback and communicate with seniors to monitor progress.
- **Webinars and videoconferencing:** During webinars and videoconferences, instructors can assess seniors' engagement by asking questions, organizing discussions and tracking participation.

These tools not only help assess seniors' learning outcomes but also provide valuable feedback on the quality of educational programs and training. Moreover, they are adapted to interactions with older people, taking into account possible technical difficulties and the needs of participants.

3.15. Online resources for the development of language skills in adult learners

Developing adult language skills is important from both a personal and professional perspective. Many online resources can help adults improve their language skills. Here are some online resources that are useful in this context:

Duolingo:	Goal: Learn many different languages in an interactive and fun way. Features: Games, exercises, pronunciation lessons, and courses available on mobile devices.
Memrise:	Goal: Develop vocabulary and learn foreign languages through repetition. Features: User-generated courses, and interactive flashcards.
BBC Languages: :	Goal: Free language courses, videos, games and exercises. Features: Resources available in multiple languages, easy-to-understand grammar explanations
Rosetta Stone:	Goal: Learning a language through the immersion method.

	Features: Interactive lessons, pronunciation modules, online tutoring.
BBC Learning English:	Goal: Develop English language skills using news, stories and videos. Features: Audio, video, tests and grammar tips.
italki:	Purpose: Arranging lessons with foreign language teachers or practising the language with native speakers. Features: Large community of foreign language teachers and students.
HelloTalk:	Goal: Develop language skills through conversations with native speakers. Features: App for text, audio and video chats with language learning partners.
FluentU:	Goal: To learn by watching authentic videos with subtitles. Features: Interactive subtitles, quizzes and content adapted to skill level.
Quizlet:	Purpose: Creating and learning based on digital flashcards. Features: Large database of flashcards available online, ability to create your own.
Tandem Language Exchange:	Goal: Finding partners to learn the language and exchange skills. Features: Application for conversations in foreign languages, possibility of tutoring.
Lang-8:	Goal: Improving writing skills in a foreign language by proofreading and assessing the text. Features: A community of users ready to help you learn to write.
Babbel:	Goal: Learning practical phrases and expressions in foreign languages. Features: Courses tailored to specific situations, and assessment tests. These online resources allow adult learners to develop their language skills flexibly, tailored to their individual needs and level of proficiency. Whatever your language learning goals, from learning for fun to improving professional skills, there are tools and materials available online that can help you succeed.

The development of seniors' language skills can be achieved thanks to a variety of online resources that are available in an easy and accessible way. I will describe some of these resources with examples below:

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Duolingo for Seniors:	Goal: Learning foreign languages in a friendly way. Example: Special courses tailored to the needs of seniors, which allow you to learn at your own pace.
Memrise for Seniors:	Goal: Develop vocabulary and language skills. Example: Courses designed for older users, focusing on useful phrases and phrases.
BBC Languages - Senior Section:	Purpose: Free language resources from the BBC. Example: Resources available in multiple languages, including user-friendly educational materials for seniors.
Busuu for Seniors:	Goal: Learning a language through interaction with native speakers. Example: Ability to communicate and exchange language skills with users from all over the world.
Language podcasts for seniors:	Purpose: Listening and improving understanding of spoken language. Example: Podcasts available in multiple languages, topics and skill levels.
YouTube Channels for Seniors:	Purpose: Educational videos for seniors learning the language. Example: Channels offering language lessons, grammar and cultural tips
tandems:	Goal: Finding a language learning partner and exchanging skills. Example: Possibility to contact native speakers and develop language skills through online conversations.
Lang-8:	Goal: Improving writing skills in a foreign language. Example: Possibility to write texts and receive corrections from native speakers.
Open Culture:	Goal: Free language courses and materials available online. Example: Language courses in various languages, including traditional and less popular ones.
Lingoda for Seniors:	Purpose: Online language lessons with a teacher. Example: Individual lessons with a teacher that can be adapted to the senior's level and needs.

These online resources offer seniors a variety of opportunities to learn and develop language skills in a convenient and accessible way. It is worth choosing those that best suit your individual needs and preferences to achieve success in language learning.

3.16. Guidance on the use of technology-enhanced teaching and learning methods for adult learners

The use of technology-enhanced teaching and learning methods with adult learners requires certain guidelines to ensure an effective and rewarding education. Below you will find some guidelines that may help you plan and implement such activities:

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- **Determining students' goals and needs:** Understanding the goals and needs of adult learners is crucial. Are they learning for professional purposes, personal development, or recreation? Adapt the program and methods to their individual goals.
- **Adjusting the content to the level of advancement:** Make sure that the materials and content are adapted to the advancement level of the participants. Whether they are learning from scratch or already have some skills, the materials should be appropriate.
- **Interaction and involvement:** Use technology to create interactive and engaging lessons. Quizzes, games, hands-on exercises and online discussions can encourage active participation.
- **Technical assistance:** Provide technical support to participants in case of problems with tools or access to materials. This may include instructions, technical assistance or a support forum.
- **Time planning and flexibility:** Allow participants to adapt learning to their schedule. Flexibility is key because adults often have full schedules.
- **Progress monitoring:** Enable participants to track their progress and results. This motivates you to continue learning.
- **Application of various media:** Use a variety of media such as video, audio, text and graphics to accommodate different learning styles.
- **Availability and availability of materials:** Ensure educational materials are available online and in formats that are accessible to participants. This may include accessibility for people with disabilities.
- **Support groups and online community:** Enable support groups or online forums where participants can share experiences, and advice and help each other.
- **Assessment and feedback:** Provide assessment and feedback to measure participants' progress and help them improve skills.
- **Teacher training:** Special training programs are available for teachers who teach online courses to help them use technology effectively in teaching adults.
- **Quality Control and Updates:** Regularly evaluate and update materials and methods to keep up with changing participant needs and technology.

By applying these guidelines, educators and educational organizations can effectively use technology to teach adult learners and help them achieve their educational goals. It is worth remembering that the approach to adult education should be tailored to the individual needs and situations of participants.

3.17. Support for the integration of digitalization in adult education curriculum

Supporting the integration of digitalization in the adult learning program involves adapting adult education programs to contemporary needs, technologies and digital tools. Below are examples of how this can be achieved:

- **Digital educational materials:** Example: Preparation of interactive textbooks, multimedia presentations, video lessons and educational games available online. You can use platforms such as Moodle, Blackboard or Google Classroom to share these materials.

- **E-learning platforms:** Example: Creating a dedicated e-learning platform where adult participants can access materials, participate in courses, and communicate with teachers and other students. Examples include edX, Coursera, and iCampus.
- **Webinars and videoconferencing:** Example: Organizing webinars and videoconferences that allow teachers and students to engage in interactive distance learning. Tools such as Zoom, Microsoft Teams and Google Meet can be used for these purposes.
- **Mobile educational applications:** Example: Creating educational applications available for smartphones and tablets that enable learning anywhere and anytime. Examples include Duolingo for language learning and Khan Academy for science.
- **MOOCs (Massive Open Online Courses):** Example: Incorporating MOOCs from well-known universities and educational institutions into the adult curriculum. This can help you flexibly deliver advanced content.
- **Artificial intelligence and data analysis:** Example: Using AI-based tools to personalize learning for adult participants by adjusting the difficulty of materials and providing personalized feedback.
- **Digital assessment and evaluation tools:** Example: Using systems to assess student progress and provide feedback. This allows teachers to focus on areas that need improvement.
- **Social Media and Online Communities:** Example: Creating groups on social media platforms where students can share their experiences, solve problems and support each other in the learning process.
- **Online consultations with teachers:** Example: Allowing students to contact teachers via instant messaging for additional explanations and learning support.
- **Progress tracking and data analysis:** Example: Using student progress tracking and data analysis tools to adapt curriculum and assess the effectiveness of learning activities.

Integrating digitalization into the adult education curriculum can significantly increase the accessibility and quality of education for this age group. It is crucial to adapt these tools to the specific needs and skills of adult participants to ensure they learn and develop skills effectively.

3.18. Artificial intelligence-based personalized learning resources for adult learners

Personalized educational resources for adult learners based on artificial intelligence (AI) are tailored to the individual needs and level of advancement of students, which contributes to more effective learning. Here's how AI can support personalized learning resources for adults:

- **Material personalization:** Artificial intelligence can analyse test results and assessments to tailor educational materials to a student's level of advancement. If someone is struggling in a particular area, AI can provide additional materials to strengthen those skills.

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- **Customized learning paths:** Based on a student's grades and progress, AI can create personalized learning paths that include specific lessons and exercises to help achieve learning goals.
- **Automatic rating:** AI can be used to automatically grade homework and tests, allowing teachers and students to constantly monitor progress and identify areas for improvement.
- **Personalized recommendations:** Based on data about students' behaviour, AI can offer recommendations for additional resources, books, videos or exercises that can support learning.
- **Personalized questions and answers:** Artificial Intelligence systems can create personalized questions and exercises that meet a student's individual needs and level.
- **Adjusting your learning pace:** AI can adjust the pace of learning to the student's pace and availability, enabling learning anywhere and anytime.
- **Support in difficult times:** AI can detect times when a student may be struggling or feeling frustrated and offer additional support or a break to reduce stress.
- **Progress tracking and data analysis:** AI makes it possible to track student progress and provide teachers and students with data on achievement and performance.

Examples of platforms and tools using AI to deliver personalized learning resources for adult learners include:

- **Khan Academy**: This platform offers personalized lessons in mathematics and other subjects, tailored to the individual skills and needs of the student.
- **Coursera:** This platform uses AI to provide personalized online course recommendations based on a student's interests and goals.
- **Adaptive Learning Systems**: Systems such as Knewton or DreamBox Learning use AI to adapt educational materials to the student's level of advancement.
- **IBM Watson Education**: Watson is an AI platform that can analyse and adapt educational content based on student behaviour.

By using artificial intelligence, personalized learning resources can deliver a more effective and efficient learning experience for adult learners, increasing their engagement and motivation to learn.

Personalized artificial intelligence (AI)-based learning resources for seniors can adapt to the unique needs and skills of this age group, which is especially important due to the diversity of experiences and knowledge levels. Here are examples of how AI can support personalized learning resources for seniors:

- **Difficulty level customization:** AI can adjust the difficulty level of educational materials to the individual skills and advancement level of seniors. If someone needs more basic material, AI can provide relevant content.

- **Adaptive content and tasks**: Based on test results or question answers, AI can deliver personalized content and tasks that are tailored to specific areas that require more attention.
- **Personalized learning paths**: AI can create personalized learning paths, taking into account seniors' educational goals and interests. Thanks to this, they can learn what interests them.
- **Technology support**: AI can help seniors cope with technology by providing simple instructions, solving technical problems and accessing online help when needed.
- **Hints and feedback**: AI can provide real-time prompts and feedback to help seniors with difficult tasks or understanding materials.
- **Track your progress and adjust:** AI can track seniors' progress and adapt learning materials based on their performance, helping to keep them motivated and engaged.

Examples of educational platforms and tools that use AI to deliver personalized learning resources for seniors include:

- **ElderLab**: It is an educational platform that uses AI to deliver personalized lessons and activities for seniors, helping them stay mentally active and develop skills.
- **Evermind:** Evermind uses AI to monitor seniors' brain health and provide educational resources to maintain mental and mental health.
- **SeniorPlanet:** It is a platform that offers a range of courses and educational resources for seniors, supported by AI to adapt materials to the needs of participants.

Thanks to personalized educational resources based on artificial intelligence, seniors can use education in a more tailored way, which can contribute to maintaining a healthy mind and an active lifestyle in old age.

3.19. Gamification tools for adult education

Gamification, i.e. the use of game elements and mechanisms to increase students' motivation and engagement, can be an effective strategy in adult education. Many tools and platforms allow you to introduce gamification into the teaching process for this age group. Here are examples of such tools:

Kahoot!:	Goal: Creating interactive quizzes and games that engage participants. Features: Ability to create your quizzes, compete with other participants, quick answers, scoring and rankings.
Quizlet: :	Purpose: To help you learn and remember materials by creating flashcards and games.

	Features: Creating flashcards, various learning modes, and competition with other users.
Classcraft:	Goal: Gamification in the classroom that promotes cooperation and motivates students. Features: Creating virtual classes, assigning characters, scoring system, tasks and challenges.
BadgeOS:	Purpose: Awarding badges and awards for academic achievements. Features: Create custom badges, monitor participant progress, and integrate with various platforms.
Duolingo:	Goal: Learning languages through games and challenges. Features: Gameplay, earn points and unlock levels, daily goals.
Edmodo:	Purpose: Educational platform with gamification features, providing classroom and material management tools. Features: Badge awarding, challenges, scoring, ability to customize materials.
Breakout EDU:	Goal: Create digital escape games that require puzzle-solving and cooperation. Features: Ready-made escape game scenarios, and tools to create your games.
Classcraft:	Purpose: A class game that promotes student cooperation and motivation. Features: Creating virtual classes, assigning characters, scoring, tasks and challenges.
Socrative:	Purpose: An interactive platform for conducting quizzes, polls and competitions. Features: Quick quizzes, data collection, real-time competition.
Plecto:	Purpose: Creating lists and results of participants in the form of interactive scoreboards. Features: Data visualizations, scoring, rankings, awards.

These gamification tools can be an effective way to increase the motivation and engagement of adult learners in the education process. By competing, earning rewards and tracking progress, gamification can make learning more attractive and effective for adults.

Gamification can also be an effective tool in the education of seniors, helping to increase their motivation and involvement in the learning process. Here are examples of gamification tools that can be used in senior education:

Seniorama:	Purpose: A platform for organizing various educational and entertainment activities for seniors. Features: Educational games, quizzes, challenges, rankings, achievement rewards.
Eldergames:	Goal: Creating educational games and interactive applications for seniors.

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	Features: Memory-based games, logic puzzles, quizzes, earning points and badges.
Silvernest Games: :	Goal: Developing the intellectual and social skills of seniors through games. Features: Board games, online puzzles, word games, competitive games.
OurTime to Move:	Goal: Mobile application encouraging seniors to be physically active and lead a healthy lifestyle. Features: Step counting, competition with other users, health goals.
Mindspace:	Purpose: A gamification platform designed specifically for seniors to stimulate the mind. Features: Quizzes, word games, logic puzzles, rankings.
AARP Brain Games:	Purpose: A free AARP platform offering a variety of games and puzzles for seniors. Features: Gameplay, memory training, competitions, prizes.
Lumosity for Seniors:	Purpose: A mind training application that helps improve memory, concentration and logical thinking. Features: Cognitive games, progress tracking, personalized tasks.
Senior Wii Bowling League:	Goal: Organizing digital bowling leagues on Nintendo Wii for seniors. Features: Sports games, team competition, scoring.
GrandPad:	Purpose: A purpose-built tablet for seniors with built-in educational and entertainment features. Features: Games, quizzes, access to online educational content.
Brainwell:	Purpose: An application with educational games that help strengthen the cognitive skills of seniors. Features: Daily challenges, progress tracking, rankings.

These tools offer a variety of games and interactive activities that help seniors exercise their minds, maintain a healthy lifestyle, and enjoy the learning process. Gamification can be not only an effective educational tool for seniors but also a source of fun and entertainment.

3.20. Virtual coaching and mentoring resources for adult educators.

Virtual coaching and mentoring resources for adult educators are available online to support the professional and personal development of teachers, instructors and trainers working with adult learners. These resources help educators improve their skills, solve problems, and grow as professionals. Here are some examples of virtual coaching and mentoring resources for adult educators:

- **e-learning platforms**: Platforms such as Coursera, edX, LinkedIn Learning and Udemy offer online courses and training materials for adult educators. There you can find

courses in teaching methodology, classroom management, communication and many other areas.

- **Online mentoring**: Virtual mentoring programs allow adult educators to work with experienced mentors online. Such programs enable you to obtain support and advice from more experienced colleagues.
- **Online Communities:** Discussion groups, online forums and professional communities focused on adult education are an excellent source of support and exchange of experiences with other educators.
- **Webinars and online training:** Many educational organizations and institutions offer free or paid webinars and online training on various aspects of adult learning. It's a great way to acquire new skills and knowledge.
- **Digital libraries**: Access to e-books, articles, reports and online educational materials can help teachers expand their knowledge of pedagogy, andragogy and other areas related to adult education.
- **Recordings of lectures and presentations**: Virtual recordings of lectures, conferences and presentations enable educators to follow the latest trends and best practices in the field of adult education.
- **Social media platforms**: Groups and pages on social media platforms such as Facebook, LinkedIn and Twitter bring together adult educators who share knowledge and experience.
- **Tools for analysis and reflection**: Online applications and tools help educators track progress, analyse learning outcomes and reflect on their practices.
- **Educational portals**: Websites and portals specializing in adult education offer many materials, articles and educational tools.
- **Training platforms for teachers**: Specialized platforms such as Teachable and Thinkific allow teachers to create and host their online courses, sharing their knowledge with others.

All these virtual coachings and mentoring resources can help adult educators develop professionally, expand their competencies and improve their work with adult learners. They offer flexibility and accessibility, which is particularly important for people working in adult education.

Virtual coaching and mentoring resources in senior education are valuable tools to support the personal, social and professional development of older people. Here are some examples of such resources:

Educational platforms for seniors: There are online platforms such as Senior Planet that offer sets of courses and educational materials tailored to the needs of seniors. These platforms include lessons on technology use, healthy living, art and culture, and other areas of interest for seniors.

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Online Mentoring: Senior mentoring programs allow older adults to receive support and guidance from more experienced mentors. Mentors and mentees can meet online, and share knowledge and experience. Webinars and online courses: Seniors can participate in webinars and online courses that help them develop their skills and interests. Such resources include lessons in language learning, art, history and healthy lifestyles.

Social networking sites for seniors: Websites and social networking sites such as SeniorNet and AARP are places where seniors can connect, share experiences and access educational resources.

Educational Apps for Seniors: There are many mobile apps tailored to the needs of seniors that help with brain exercises, language learning, health education and other areas.

- **Remote health support platforms:** Some health platforms offer older people access to educational resources that help them understand and manage their health, for example by learning about chronic diseases or healthy lifestyles.
- **Online book clubs**: Seniors can join online book clubs where they read and discuss books with others. This is a great opportunity to learn and activate your mind.
- **Recordings of lectures and presentations:** Many educational institutions provide recordings of lectures and presentations online. Seniors can use these resources to continue their learning and expand their knowledge.
- **Platforms for taking courses at universities**: Some universities offer older people the opportunity to participate in online or hybrid courses, which allows them to acquire new knowledge and skills.
- **Online consultations with experts**: Seniors can benefit from online consultations with experts in various fields, such as health, finance and technology, for individual support and advice.

Virtual coaching and mentoring resources are important tools supporting the development and self-development of seniors, allowing them to continue learning, develop interests and maintain an active lifestyle. They give seniors access to a wide range of knowledge and experience, as well as enable social integration and active participation in social life.

4. Digital Facilitator competence map

Creating a digital competence map for adult educators involves outlining the various skills and knowledge areas they need to effectively navigate and utilize digital tools for educational purposes. Here's a comprehensive digital competence map for adult educators which focuses on

- professional/occupational competence,
- digital literacy and DigComp framework
- and andragogy.

These dimensions encompass a comprehensive set of skills and knowledge areas that collectively define an individual's digital competencies. Developing proficiency across these dimensions contributes to effective navigation and utilization of digital technologies in various personal, professional, and educational contexts.

The European Union (EU) has created the DigComp Framework (see Annex 2), a crucial tool, to address the issue of investing in digital transformation in our lives and workplaces. DigComp defines the competencies required to use digital technologies in our modern world in a self-assured, critical, collaborative, and creative manner for carrying out tasks and attaining objectives about employment, education, leisure, inclusion, and participation. We do agree on the importance of these elements and following them, however, the digital competence map consists of a broader understanding of adult educators' digital competence. The digital competence map (Figure 1) suggests a broad overview of all competence importance (professional, andragogical and digital). In developing the competence map for adult educators in digital topics, careful consideration has been given to valuable insights obtained from surveys and questionnaires conducted previously, both among adult educators and adult learners. These valuable contributions have played a pivotal role in shaping the competencies, ensuring alignment with the real-world needs and expectations of educators and their students in the digital learning environment. By incorporating the perspectives and experiences of those directly involved in adult education, this framework aims to promote a more effective and learner-centric approach to adult digital education, ultimately enhancing the quality and relevance of the educational experience.

Figure 1. Adult Educator's Digital Competence Map
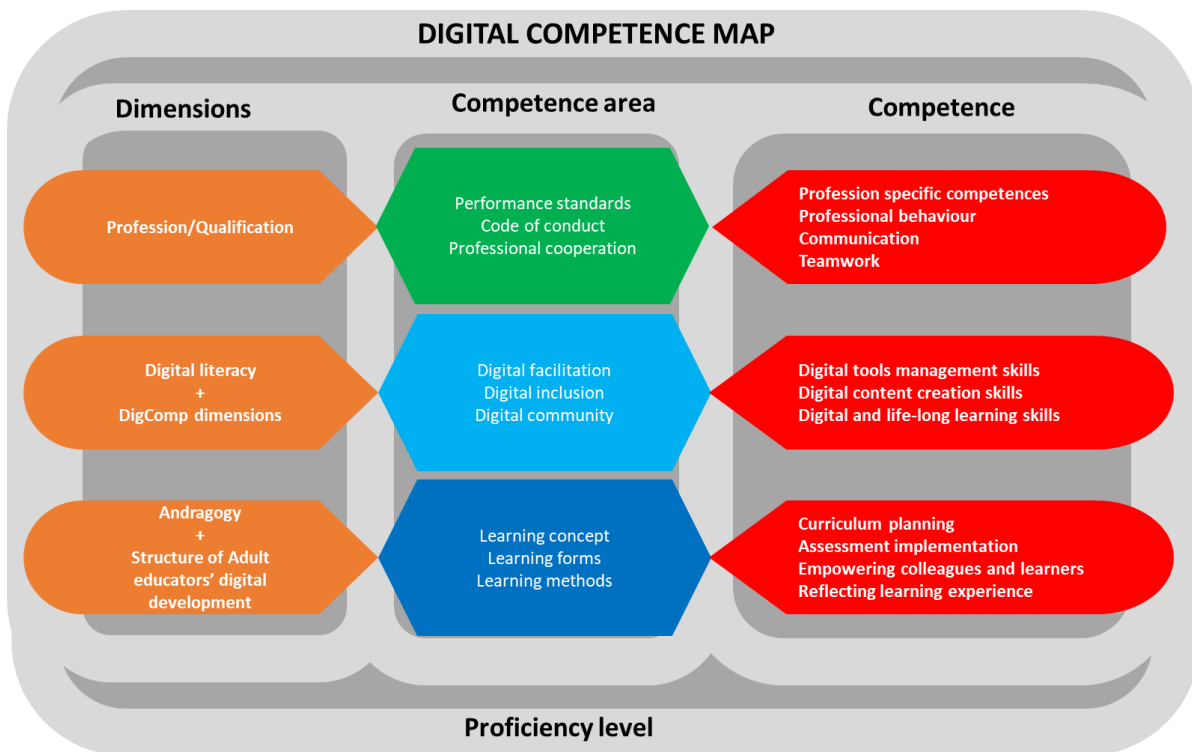
4.1. Professional/Qualification

Competence is of utmost importance for adult educators as it directly impacts the effectiveness and quality of their teaching and facilitation. Adult learners have unique characteristics and needs, and educators must possess a specific set of competencies to meet these requirements and create a conducive learning environment. Competences are important for adult educators focused on subject (occupational) expertise. Adult learners often come with diverse backgrounds and experiences. Having a strong grasp of the subject matter ensures educators can provide accurate and relevant information to meet the learners' needs.

Performance standards and a code of conduct are the core elements of each profession. Adult educators' **performance standards** (see Figure 2) refer to the criteria and expectations that are established to evaluate the effectiveness and quality of adult educators' work in various educational settings. These standards help ensure that adult educators are delivering high-quality instruction and support to their learners. A **code of conduct for adult educators** is a set of ethical guidelines and principles that outline the expected standards of behaviour and professional conduct for individuals working as educators with adult learners. It defines the responsibilities, values, and ethical norms that adult educators should adhere to to

maintain professionalism, create a respectful learning environment, and promote the educational goals and well-being of adult learners. This code helps ensure that adult educators act with integrity, respect, and competence in their teaching and interactions with adult students.

Figure 2. Adult educator's digital competence map profession/qualification dimension
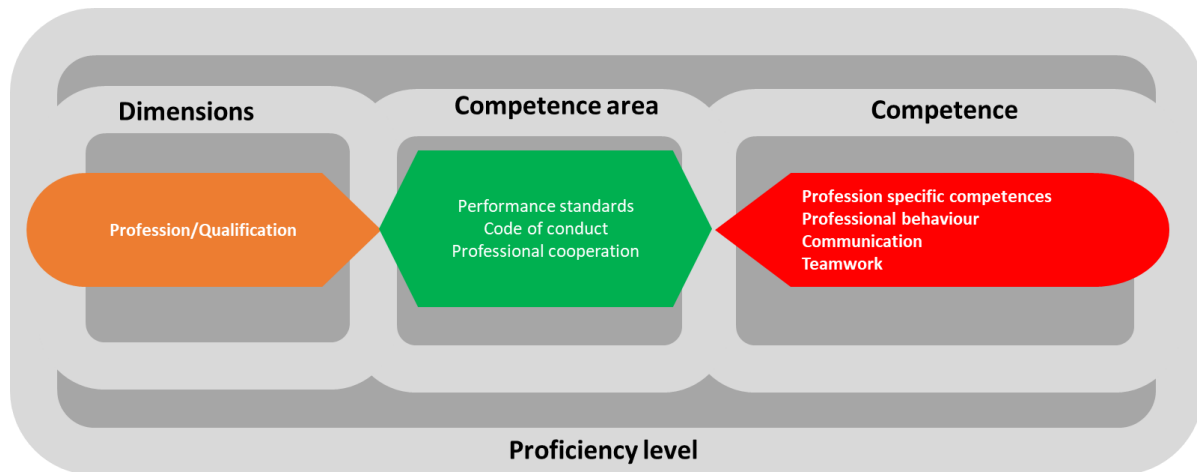
The specific performance standards and code of conduct may vary depending on the organization, context, and educational goals. Adult educators should have a strong command of the subject they are teaching, demonstrating depth of knowledge and the ability to communicate complex concepts. Adult educators should adhere to ethical standards, maintain confidentiality, respect boundaries, and promote a safe and respectful learning environment. Demonstrating a commitment to ongoing professional development and staying up-to-date with current trends and education research is important.

Professional cooperation competence is important to be able to build new learning environments and communities. Main profession-specific competencies are not only focused on professional competencies but also on "soft" skills like professional behaviour, communication, teamwork and others.

The competence areas for adult educators — Performance standards, Code of conduct, and Professional cooperation — can be reflected in specific competencies that adult educators should possess related to the following points:

1. **Profession-specific competencies**: These competencies are specific to the knowledge and skills required for adult education. Adult educators must have a deep understanding of adult learning principles, curriculum development, teaching techniques tailored to adult learners, and the ability to assess adult learners' needs.

2. **Professional behaviour**: Professional behaviour for adult educators involves adhering to a code of conduct that dictates ethical conduct in their interactions with adult learners. It includes maintaining a respectful and inclusive learning environment, respecting the diverse backgrounds and needs of adult students, and promoting a safe and non-discriminatory atmosphere.
3. **Communication**: Effective communication is crucial in adult education. Educators need to be proficient in explaining concepts clearly, actively listening to adult learners, and adapting their communication style to the unique needs and preferences of the learners. Communication also extends to providing constructive feedback and facilitating open dialogue.
4. **Teamwork**: While adult educators may often work independently, they may also need to collaborate with other educators or professionals within the field of adult education. Teamwork competencies include the ability to work effectively with colleagues, share insights and best practices, and engage in collaborative curriculum development or program improvement efforts.

Below, some of the concepts related to the competencies included in this section are explained in more detail.

4.1.1. Ethical standards

In our rapidly evolving digital age, education has undergone a profound transformation, extending its reach beyond the confines of traditional classrooms. Digital education for adults, often referred to as adult e-learning or online education, has become increasingly prevalent. However, as this mode of education continues to gain prominence, it is crucial to address the ethical standards that underpin it. Ethical considerations in digital education for adults are of paramount importance, as they shape the quality, equity, and integrity of the learning experience. At this point, we will explore the ethical standards within the realm of digital education for adults, analysing the key issues, challenges, and potential solutions:

1. Accessibility and Equity. One of the foundational ethical principles in digital education for adults is accessibility and equity. Ensuring that education is available to all, regardless of their physical abilities, socio-economic status, or geographical location, is vital. It is imperative to design digital learning environments that are accessible to individuals with disabilities. This includes providing alternative formats for content, captioning for videos, and ensuring compatibility with assistive technologies. Moreover, efforts should be made to bridge the digital divide, ensuring that those without reliable internet access or necessary devices are not excluded from the learning experience.
2. Privacy and Data Security. The collection and use of personal data in digital education for adults raise ethical concerns. Educational institutions and technology providers must be transparent about their data collection practices and ensure that learners' privacy is protected. This includes obtaining informed consent for data collection,

securing data storage, and using it solely for educational purposes. Data breaches can have severe consequences, eroding trust in digital education platforms and compromising the personal information of adult learners.

3. Quality of Content and Instruction. Ethical standards also pertain to the quality of educational content and instruction in the digital realm. Institutions must provide accurate, up-to-date, and unbiased information to learners. Furthermore, instructors should possess the necessary qualifications and competencies to deliver effective online education. Plagiarism, cheating, and the use of subpar instructional materials should be discouraged and appropriately addressed. Quality assurance mechanisms should be in place to maintain the integrity of digital education for adults.

4. Ethical Behaviours in Online Communities. Digital education often relies on online communities and collaborative learning environments. Ethical behaviour within these spaces is essential to foster a positive and productive learning environment. Adult learners should be encouraged to respect diverse perspectives, engage in constructive dialogue, and avoid harmful or offensive behaviour such as cyberbullying or harassment. Instructors must set clear expectations for online conduct and enforce consequences for ethical breaches.

5. Intellectual Property and Copyright. The digital landscape presents challenges regarding intellectual property and copyright. Educational materials, including text, images, videos, and software, may be protected by copyright laws. Institutions and learners must adhere to these laws, obtaining proper permissions and licenses for the use of copyrighted materials. Plagiarism, the unauthorised distribution of copyrighted content, and the violation of intellectual property rights undermine ethical standards and legal principles in digital education.

6. Assessment and Evaluation. Ethical assessment and evaluation practices are essential to ensure fairness and objectivity in digital education for adults. Assessment criteria should be clear, transparent, and aligned with learning objectives. Instructors should guard against favouritism, bias, or discrimination when grading assignments or conducting evaluations. Moreover, learners should have the opportunity to provide feedback on the quality of instruction and assessment processes, promoting continuous improvement.

7. Continuous Professional Development. To maintain ethical standards and provide high-quality digital education for adults, instructors and educators should engage in continuous professional development. Staying current with best practices, emerging technologies, and evolving ethical guidelines is crucial. This commitment to ongoing learning ensures that instructors can provide the best possible educational experience to adult learners.

Ethical standards play a central role in shaping the landscape of digital education for adults. These standards encompass accessibility, privacy, content quality, ethical behaviour, intellectual property, assessment, and professional development. Ensuring that digital education is equitable, respects learners' privacy, and upholds the highest standards of educational quality is essential in fostering a robust and ethical digital learning environment. To confront the challenges posed by the ever-evolving digital landscape, educators,

institutions, and technology providers must remain vigilant and proactive in addressing ethical concerns to create a sustainable and inclusive educational future for adults.

In the face of these ethical challenges, it is incumbent upon educational institutions and technology providers to establish comprehensive policies and guidelines that promote ethical behaviour and compliance with established standards. Such policies should be communicated clearly to both instructors and learners, ensuring that all stakeholders understand their responsibilities and the consequences of ethical violations.

To address the issue of accessibility and equity, institutions must invest in infrastructure that supports digital education for all. This may include subsidising internet access, providing loaner devices, or creating community centres with reliable connectivity. Additionally, training programmes can be offered to help adult learners become more proficient in using digital tools and navigating online learning platforms. This not only enhances access but also empowers individuals to make the most of digital education opportunities.

When it comes to data privacy and security, strict protocols must be in place to safeguard personal information. This includes encryption, secure data storage, and regular audits to identify and rectify vulnerabilities. Transparent data usage policies, informed consent processes, and the ability for learners to control their data should be integral components of any digital education platform.

To ensure content quality and ethical instruction, institutions should have robust quality assurance mechanisms in place. Peer reviews of instructional materials, regular evaluations of instructors, and the implementation of anti-plagiarism software are some strategies that can help maintain high standards. Additionally, providing instructors with ongoing training in effective online teaching practices is essential to maintain educational integrity.

Ethical behaviour within online communities can be promoted through community guidelines and codes of conduct. These guidelines should emphasise respect, inclusivity, and constructive engagement. Instructors can also play a pivotal role by modelling ethical behaviour and addressing any disruptive conduct promptly and fairly.

Dealing with intellectual property and copyright concerns requires a combination of legal compliance and educational efforts. Educational institutions should educate both instructors and learners about copyright laws and how to properly attribute and use copyrighted

materials. They should also consider open educational resources (OER) and open-access content as ethical alternatives to copyrighted materials, promoting sharing and collaboration within the educational community.

Assessment and evaluation practices should be continuously monitored and improved. Instructors should receive training in creating fair and unbiased assessments, and learners should be encouraged to provide feedback on the assessment process. Transparent grading rubrics and clear expectations can help reduce the potential for ethical breaches during evaluation.

Finally, continuous professional development for educators is critical in ensuring that they remain up-to-date with evolving ethical guidelines and emerging technologies. Institutions should invest in training and development programmes for instructors, encouraging them to stay engaged in ongoing learning. This not only helps maintain ethical standards but also enhances the quality of education provided to adult learners.

In conclusion, ethical standards are the cornerstone of digital education for adults. By addressing accessibility, privacy, content quality, ethical behaviour, intellectual property, assessment, and professional development, educational institutions and technology providers can create an environment that fosters ethical conduct and provides equitable access to high-quality education for all adult learners. Embracing these ethical standards not only strengthens the integrity of digital education but also ensures that it remains a valuable and inclusive tool for lifelong learning in the digital age.

4.1.2. Maintaining confidentiality

In the digital age, education for adults has witnessed a significant shift towards online platforms and virtual classrooms. This transition has been catalysed by the convenience and flexibility offered by digital education. However, as the digital landscape expands, it becomes imperative to address a crucial ethical and practical concern: maintaining confidentiality. The confidentiality of student data, personal information, and learning materials in digital education for adults is of paramount importance. This point delves into the critical role that confidentiality plays in ensuring the success and ethical integrity of adult digital education.

1. Safeguarding Personal Information. One of the central aspects of maintaining confidentiality in digital education for adults is the safeguarding of personal information. Adult learners often share sensitive data with educational institutions, including their names, contact information, and sometimes financial details. In the digital realm, this information can be susceptible to data breaches and cyberattacks. Thus, institutions must take stringent measures to protect this data, ensuring that it remains confidential and secure.

2. Fostering Trust and Confidence. Confidentiality is an essential element in fostering trust and confidence among adult learners. When learners enrol in digital courses, they entrust educational institutions with their personal and academic information. The assurance that their data will be handled confidentially and not misused is vital in creating a safe and conducive learning environment. When trust is established, learners are more likely to engage actively in the educational process.

3. Promoting Open Communication. Confidentiality also plays a pivotal role in promoting open and honest communication within the digital learning environment. Learners need to feel comfortable expressing their opinions, seeking help, or sharing concerns without fear of their information being divulged to others. Instructors and institutions must respect this confidentiality to ensure that learners are free to engage fully in the learning process.

4. Protecting Intellectual Property. In the digital education realm, learners often create and share their intellectual property, such as research papers, projects, or creative works. Maintaining confidentiality extends to safeguarding these intellectual creations. It is the responsibility of institutions to ensure that learners' original work is protected from unauthorised access, use, or reproduction, thus preserving the integrity of their contributions.

5. Ethical Conduct in Assessment and Evaluation. Maintaining confidentiality is essential in the assessment and evaluation of adult learners. Instructors must ensure that the grading process remains confidential and unbiased. Disclosure of learners' grades to other students or external parties without consent can lead to ethical breaches and erode trust within the learning community. Confidentiality in this context promotes fairness and objectivity.

6. Compliance with Legal and Ethical Standards. Educational institutions engaged in digital education for adults must adhere to legal and ethical standards regarding the handling of student data and personal information. Laws such as the General Data Protection Regulation (GDPR) in the European Union and the Family Educational Rights and Privacy Act (FERPA) in the United States mandate strict confidentiality standards. Non-compliance not only poses legal risks but also damages the reputation of institutions.

7. Supporting Diverse Learning Needs. Maintaining confidentiality is particularly crucial in supporting the diverse learning needs of adult students. Many adult learners return to education after years in the workforce or other life experiences. They may have unique requirements or concerns related to their education that they wish to keep private. Respecting and maintaining confidentiality ensures that institutions can provide tailored support without compromising learners' privacy.

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In the realm of digital education for adults, maintaining confidentiality is an ethical and practical imperative. It safeguards personal information, fosters trust, promotes open communication, protects intellectual property, ensures ethical conduct in assessment, and ensures compliance with legal and ethical standards. Furthermore, confidentiality supports diverse learning needs, creating an environment where adult learners can thrive and succeed. Educational institutions and instructors must recognise the pivotal role that confidentiality plays and commit to upholding these standards rigorously. Ultimately, the preservation of confidentiality in digital education for adults is central to the promotion of ethical integrity, trust, and the continued growth of online learning.

4.1.3. Respecting boundaries

In the rapidly evolving digital age, the role of adult educators has expanded beyond traditional classroom settings to encompass teaching digital literacy skills. The ability to navigate the digital landscape is now a fundamental requirement for individuals to participate fully in society and the workforce. As adult educators take on this crucial task, it becomes imperative to understand and embody the concept of "Respecting Boundaries." This essay explores the multifaceted notion of respecting boundaries within the competencies that educators teaching digitalization to adults should possess.

Understanding Digitalization in Adult Education. Digitalization refers to the process of integrating digital technologies into various aspects of life, including education. In adult education, it entails equipping adult learners with the necessary skills and knowledge to interact effectively in a digital world. This encompasses digital literacy, online communication, information retrieval, and the ethical use of technology.

The Role of the Adult Educator. Adult educators play a pivotal role in facilitating digital literacy among adult learners. They serve not only as instructors but also as guides, mentors, and facilitators of learning. To excel in this role, educators should possess a set of competencies that extend beyond technical expertise. These competencies include pedagogical skills, empathy, adaptability, and, crucially, a deep commitment to respecting boundaries.

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Respecting Boundaries: A Multi-Faceted Concept

1. Respecting Learner Boundaries. Adult learners may have varying comfort levels with technology. Some may be digital natives, while others may be newcomers. Educators must respect these individual boundaries and provide a safe and supportive learning environment. This involves acknowledging learners' diverse experiences and tailoring instruction to meet their unique needs. It also means recognising when learners need additional support or when they require space to explore digital tools at their own pace.

2. Privacy and Data Protection. In the digital realm, privacy and data protection are paramount. Adult educators should instil a strong sense of digital ethics, ensuring that learners understand the importance of safeguarding their personal information and respecting the privacy of others. Moreover, educators themselves must model responsible digital behaviour by handling learner data with care and following relevant privacy regulations.

3. Online Etiquette and Respect. Online communication platforms often lack the nuances of face-to-face interaction. Educators should teach adult learners about online etiquette and the importance of respectful and inclusive communication. This includes addressing issues such as cyberbullying, hate speech, and misinformation. Respecting boundaries in online interactions means fostering a digital culture that values civility and empathy.

4. Digital Well-being. The constant connectivity of the digital world can lead to issues such as digital burnout and addiction. Educators should be attuned to these challenges and promote digital well-being among their adult learners. This involves teaching strategies for managing screen time, balancing online and offline activities, and maintaining mental and emotional health in the digital age.

5. Accessibility and Inclusivity. Respecting boundaries also means ensuring that digital learning materials and environments are accessible to all. Educators should be well-versed in accessibility standards and practices, making digital content and tools usable by individuals with disabilities. They should also promote inclusivity by accommodating diverse learning styles, backgrounds, and abilities.

In the context of adult education for digitalization, respecting boundaries emerges as a foundational concept that underpins effective instruction. It encompasses the respectful treatment of adult learners, the responsible use of technology, the promotion of digital ethics, and the fostering of digital well-being. Adult educators who possess these competencies not only empower learners with essential digital skills but also create a learning environment that is inclusive, respectful, and conducive to growth.

As adult education continues to evolve in the digital age, respecting boundaries should remain at the forefront of educators' minds. It is not merely a technical or theoretical concept but a fundamental aspect of ethical and effective digital literacy instruction. By embodying the principles of respecting boundaries, adult educators contribute to a more digitally competent, responsible, and empathetic society.

4.1.4. Promoting a safe and respectful learning environment

In the realm of adult education, the digital age has ushered in a transformational shift in the way knowledge is acquired and shared. Adult educators now find themselves tasked not only with imparting digital literacy skills but also with creating a learning environment that is safe, respectful, and conducive to effective learning. In this essay, we explore the critical concept of "Promoting a Safe and Respectful Learning Environment" within the competencies required for adult educators teaching digitalization to adult learners.

The Evolving Role of the Adult Educator. Adult educators have transitioned from traditional classrooms to dynamic virtual and digital spaces, where they play multifaceted roles as guides, mentors, and facilitators of learning. Beyond technical knowledge, educators must now cultivate a range of competencies that foster a secure and respectful atmosphere for adult learners in the digital age.

Promoting a Safe and Respectful Learning Environment: A Holistic Concept

1. Ensuring Digital Safety. One of the foremost responsibilities of adult educators in the digital realm is to ensure the safety of their learners. This entails educating adult learners about online risks such as cyberbullying, phishing, and data breaches. Educators should guide learners on how to protect their personal information and use digital tools securely. Additionally, educators must model safe online behaviour and adhere to privacy regulations.
2. Creating Inclusive Spaces. In the digital world, inclusivity is key to promoting a respectful learning environment. Adult educators should design digital learning spaces that accommodate diverse backgrounds, abilities, and learning styles. They must be mindful of accessibility standards to ensure that all learners can fully participate, regardless of any disabilities or limitations.
3. Fostering Digital Etiquette. The digital landscape often lacks the nuances of face-to-face communication, making it essential for educators to teach digital etiquette. This includes promoting respectful online interactions, discouraging cyberbullying and hate speech, and encouraging learners to communicate with empathy and civility. Educators should address issues promptly when they arise to maintain a respectful atmosphere.
4. Facilitating Informed Digital Citizenship. Educators must instil the principles of responsible digital citizenship. This involves teaching learners how to critically evaluate online content, identify misinformation, and be responsible digital consumers. It also means educating learners about their rights and responsibilities in the digital world, including respecting copyright and intellectual property.
5. Empowering Learners to Speak Up. In a safe and respectful learning environment, learners should feel comfortable speaking up about their

concerns and reporting inappropriate behaviour. Educators should create channels for learners to voice their issues or seek help when necessary. This empowers learners to take ownership of their learning environment and contributes to a culture of mutual respect.

6. Promoting Emotional Well-being. The digital world can sometimes be overwhelming, leading to issues such as digital burnout and anxiety. Adult educators should promote learners' emotional well-being by providing guidance on managing screen time, maintaining a healthy work-life-digital balance, and offering strategies for coping with the stresses of the digital age.

In the context of adult education in digitalization, the concept of "Promoting a Safe and Respectful Learning Environment" stands as a pillar upon which effective instruction rests. Adult educators who embody this concept not only impart digital literacy skills but also create a nurturing environment where learners feel safe, valued, and respected.

As the digital landscape continues to evolve, adult educators must remain vigilant and proactive in fostering a culture of digital respect and safety. The competencies encompassed within this concept are not merely technical skills but ethical imperatives that underpin responsible and effective digital literacy education. By promoting a safe and respectful learning environment, adult educators empower learners to navigate the digital world with confidence, integrity, and empathy, ultimately contributing to a more digitally competent and harmonious society.

4.2.   Digital literacy + DigComp framework

DigComp Framework elements describing main elements of digital skills (information and data literacy, communication and collaboration, digital content creation, safety, problem-solving). Based on the DigComp framework we build up extra important elements to adult educator's digital competence map (Figure 3).

In this figure, three areas of competence that must be taken into account within the field of adult educators in digital matters are distinguished:

1. **Digital Facilitation**. Digital facilitation encompasses the skills and practices adult educators employ to effectively guide and support learning in digital environments. It involves creating an inclusive and engaging online learning atmosphere, fostering active participation, and facilitating learner interactions. Digital facilitators are proficient in using digital tools and platforms for teaching, promoting critical thinking and problem-solving, and ensuring learners achieve their intended learning outcomes.

2. **Digital Inclusion**. Digital inclusion refers to the commitment of adult educators to ensure that all adults, regardless of their digital literacy levels, socioeconomic backgrounds, or personal circumstances, have equitable access to digital technologies and opportunities for digital learning. It involves providing tailored support and resources to bridge the digital divide, addressing digital accessibility issues, and empowering learners to navigate the digital landscape safely and confidently. Digital inclusion aims to eliminate barriers to participation in the digital world.

3. **Digital Community**. A digital community comprises a group of adults who share common interests, learning goals, or professional objectives and come together through online platforms to collaborate, share knowledge, and support one another's growth and development. Digital community-building is a competency that adult educators should possess to foster a sense of belonging, engagement, and collaboration among learners within virtual spaces. It involves facilitating discussions, organizing online events or forums, and nurturing a culture of mutual respect and shared learning experiences among community members.

These competencies are integral for adult educators in the digital age as they help create effective, inclusive, and supportive learning environments that enable adults to thrive in the rapidly evolving digital landscape.

These three areas manifest as three specific competencies:

1. **Digital Tools Management Skills**. Digital tools management skills refer to the ability of adult educators to efficiently and effectively navigate, select, and utilize a wide range of digital tools and software applications for educational purposes. This competency involves expertise in managing tools for communication, content delivery, assessment, and collaboration. Educators proficient in digital tools management can leverage technology to enhance the learning experience, streamline administrative tasks, and adapt to evolving technological landscapes.

2. **Digital Content Creation Skills**. Digital content creation skills encompass the capability of adult educators to design, develop, and deliver high-quality educational materials in digital formats. This competency involves multimedia creation, instructional design, and content curation proficiency. Educators with solid digital content creation skills can produce engaging and interactive digital resources, such as videos, e-books, online courses, and multimedia presentations, tailored to meet adult learners' specific learning needs and preferences.

3. **Digital and Life-Long Learning Skills**. Digital and life-long learning skills represent the educator's ability to continuously update knowledge and adapt to emerging technologies and educational trends. This competency involves a commitment to personal and professional development and the capacity to model and encourage life-long learning practices among adult learners. Educators with these skills are adept at staying informed about digital advancements, adopting new pedagogical approaches, and fostering a culture of curiosity and self-improvement in their teaching environments.

These competencies are crucial for adult educators in digital subjects as they empower them to leverage technology effectively, create engaging digital learning experiences, and cultivate a culture of ongoing learning and growth among their adult learners.

Throughout this section, these aspects are analyzed comprehensively and integrated

Figure 3. Adult educators' digital competence map digital literacy dimension
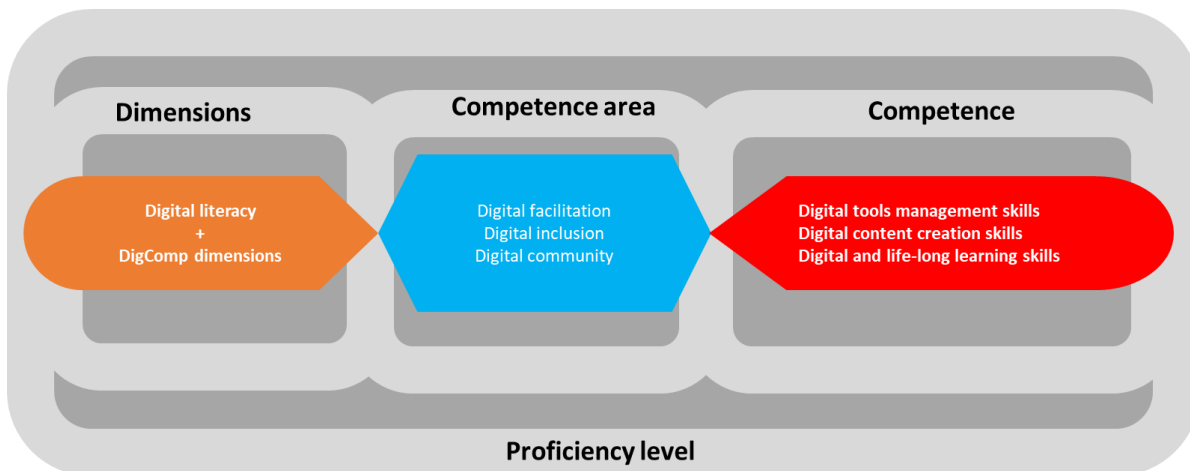
In today's rapidly evolving technological landscape, digital literacy is significant for adult educators. Digital communication has become a reality and daily life necessity, we are utilizing email, instant messaging, and video conferencing tools for effective communication with participants. As technology becomes increasingly integrated into education, adult educators must possess digital literacy skills to effectively navigate digital tools, platforms, and resources. As technology plays an increasingly important role in education, educators should be comfortable using relevant tools and platforms to enhance the learning experience. Nowadays we almost not talking about understanding fundamental computer operations and terminology and competencies to navigate operating systems (Windows, macOS, Linux) and file management, how to use input devices (keyboard, mouse, touchpad) efficiently because it is the minimum level of each adult educators' digital competences.

Adult education is no longer confined to traditional classrooms. Online learning, blended learning, and various digital platforms are common. Educators need to be comfortable with these environments to engage learners effectively. **Digital facilitation** based on different digital tools can enhance teaching methods, making lessons more interactive, engaging, and accessible. Educators with digital literacy can use multimedia, simulations, and interactive

content to cater to diverse learning styles. The internet offers a vast array of resources that can supplement traditional teaching materials. Educators with digital literacy can curate and evaluate online resources to enrich their teaching materials. Digital literacy enables educators to communicate effectively with learners through various channels, such as email, discussion boards, and messaging apps. Clear communication is essential for addressing questions, providing guidance, and fostering a supportive learning environment. Online platforms and tools facilitate collaborative learning among adult learners. Educators can guide learners in using digital tools to work together on projects, share ideas, and learn from one another. Digital tools offer innovative assessment methods beyond traditional tests. Educators can use online quizzes, interactive assignments, and peer assessments to evaluate learners' understanding. Utilize video conferencing tools for remote meetings and webinars and engage in online forums, communities, and social media for networking.

The digital landscape is constantly evolving. Educators with digital literacy can stay updated on emerging technologies, trends, and best practices in educational technology. Continuously refine digital skills to adapt to changing educational landscapes. This digital competence map provides a structured overview of the skills and knowledge areas adult educators need to effectively navigate the digital realm for educational purposes. Keep in mind that the digital landscape is constantly evolving, so educators should remain open to continuous learning and adaptation.

Digital tools (Table 1) enable educators to tailor learning experiences to individual learners' needs, allowing for differentiated instruction and personalized feedback. Digital online platforms help to navigate and use learning management systems (e.g., Moodle, Canvas). Create and manage courses, assignments, quizzes, and discussions and upload and share digital learning materials (text, multimedia, links). For most adult educators is still difficult without IT support to develop online courses and materials using learning management systems. Employing pedagogical strategies tailored for virtual learning environments and assessing and providing feedback on digital assignments and activities. Proficiently use virtual meeting platforms (e.g., Zoom, Microsoft Teams) for workshops and sessions and understand how to set up breakout rooms for group activities and discussions, share screens, multimedia **content**, and interactive tools during virtual sessions. Navigate and moderate virtual discussions and forums to encourage participant engagement and deliver clear and concise

instructions using digital communication channels. All of this fosters the creation of **digital communities**.

Table 1. Digital tools for adult educators//

Surveys	Brainstorming and mind map	Interactive tools	Word clouds creation	Digital assessment tools	Digital storytelling tools	Feedback gathering
Survey Hero	AnswerGarden	Lino	EdWordle	Mentimeter	Powtoon	Feedback
SurveyMonkey	Goggle a mind-mapping tool	Googledoc	Word clouds	Socrative	Doodly	Get feedback
SurveyPlanet	Cenceptboard Software	Onenote	TadCrowd	Formative	Doodlemake	Ask nicely
Zoho Survey	Dotstorming	Prezi	Tagxedo	Poll everywhere	ZooBurst	Survicate
Questback	Ibrainstorm	Piktochart	Word Cloud Maker	Quizlet	Toontastic 3D	Typeform
Qualtrics	Padlet	Monday	ToCloud	Plickers	Animaker	Refiner
GoogleForms	ShowMe	TEDEd	Wordables	Kahoot	Moovly	ProProfs Survey Maker

Source: Handbook for adult educators (Ž.Navikienė, 2022)

4.2.1. Enhancing Virtual Adult Education

Adult educators should be able to design interactive activities and icebreakers suitable for virtual environments, incorporate polls, quizzes, and collaborative tools to maintain participant engagement and foster a sense of community and connection among participants through digital means. Guide participants in using online collaboration tools (e.g., Google Docs, Trello) for group projects and activities. Promote effective collaboration and teamwork through digital platforms.

In an era where digital technology is an integral part of our daily lives, the field of adult education has had to adapt and evolve to meet the demands of learners seeking knowledge and skills in virtual environments. The role of adult educators in this context is more vital than ever, as they are not only responsible for imparting knowledge but also for creating a meaningful and engaging learning experience in the digital realm.

To enhance virtual adult education, educators must possess a diverse set of skills and strategies. This point will delve into the various aspects of this challenge, focusing on the key points outlined.

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4.2.1.1. Designing Interactive Activities and Icebreakers

The first crucial aspect of enhancing virtual adult education is the ability to design interactive activities and icebreakers suitable for virtual environments. Unlike traditional classroom settings, virtual learners may feel isolated and disconnected. Therefore, adult educators must craft activities that break the ice and create a sense of community from the outset.

Interactive activities can range from virtual group discussions and forums to collaborative projects that require learners to work together towards a common goal. These activities not only foster engagement but also enable participants to share their unique perspectives and experiences, enriching the learning environment.

4.2.1.2. Incorporating Polls, Quizzes, and Collaborative Tools

Engagement is a cornerstone of effective adult education, and it becomes even more critical in virtual settings. To maintain participant engagement, educators must incorporate various tools and techniques. Polls and quizzes serve as excellent methods to assess learners' understanding and keep them actively involved.

Polls can be used to gauge opinions, gather feedback, or spark discussions on relevant topics. Quizzes, on the other hand, test comprehension and reinforce learning objectives. Both tools offer immediate feedback, helping learners track their progress and stay motivated.

Furthermore, collaborative tools are indispensable in virtual adult education. Platforms like Google Docs and Trello enable learners to collaborate seamlessly on group projects and activities. Educators should guide participants in using these tools, ensuring they are comfortable with the technology and can harness its full potential for effective collaboration.

4.2.1.3. Fostering a Sense of Community and Connection

One of the challenges in virtual adult education is the potential for learners to feel isolated. Adult educators must take proactive steps to foster a sense of community and connection among participants through digital means. This can be achieved through various strategies:

1. Virtual Meetups: Organising regular virtual meetups or webinars where learners can interact face-to-face, albeit online, can create a sense of belonging and camaraderie.

2. Discussion Forums: Providing discussion forums or social media groups dedicated to the course or subject matter allows participants to connect, share insights, and seek support from peers.
3. Group Projects: Collaborative group projects not only promote learning but also build a sense of community as participants work together towards a common goal.
4. Personalised Feedback: Engaging in one-on-one interactions with learners, offering personalised feedback, and addressing their individual needs can make participants feel valued and connected.

4.2.1.4. Promoting Effective Collaboration and Teamwork

Effective collaboration and teamwork are essential life skills, and virtual adult education provides an excellent platform for honing these abilities. Adult educators should actively promote collaboration and teamwork through digital platforms, ensuring that learners not only acquire knowledge but also develop valuable interpersonal skills.

Incorporating team-based assignments and projects into the curriculum encourages participants to collaborate, communicate, and problem-solve together. Educators can use virtual breakout rooms, project management tools, and video conferencing to facilitate effective teamwork.

In conclusion, enhancing virtual adult education is a multifaceted endeavour that demands adaptability, creativity, and a deep understanding of the digital landscape. Adult educators must design interactive activities, incorporate engagement tools, foster a sense of community, and promote effective collaboration to provide a rich and fulfilling learning experience for participants. By embracing these principles, educators can empower adult learners to thrive in the ever-evolving digital world and contribute meaningfully to their personal and professional growth.

4.2.2. Lifelong Learning and Adaptability-Micro-learning methods

By demonstrating digital literacy, educators model the importance of **lifelong learning** and adaptability, encouraging learners to embrace technology for their continuous growth. Embracing a growth mindset and seeking continuous learning opportunities. Adapting to technological changes and acquiring new digital skills as needed. Being open to experimenting with new tools and approaches. "Digital andragogy based on micro-learning goals, methods and tools, channels described in table 2. The goal of micro-learning methods is to focus on

the needs/interests of the target person/group. Learning approach and content depend on the main skills that the learner wants to develop. Micro-learning methods are focused on interaction using digital tools and channels, different digital platforms, and apps which makes micro-learning attractive. Micro-learning methods, tools, and channels depend on the goal and learning content".

Table 2. Micro-learning methods

Goal	Methods	Tools	Channels
• Create content connected with the needs/interests of the target group • Support curiosity and expanded • Empower with popular facilitating • Online learning	• Learning approach • How to develop main skills Involvement of learners • Self-test • Interaction using digital tools	• Explainer videos • Brief & interactive Videos • Micro-lectures • Whiteboard animations • Kinetic text-based animations • Presentations	• Digital platforms, MOOC
• Integration of occupational aspects with ESD	• Visualization • Interactive tools • Connection professional competencies with ESD	• Multiple question quizzes • Polls, flashcards • Question & responses • Simulations • Learner recordings to answer questions • Statistical infographics • Informational infographics	• Micro-learning apps • Google • Youtube • Headspace • Lasting • Word of the day • TED • Games • Digital badges
• Engage and stimulate interest in occupational innovations	• Create a supportive learning environment	• Timeline infographics • Process infographics • Geographic infographics • Comparison infographics • Hierarchical infographics • List infographics	• Micro-learning social platforms • Tiktok, youtube, Facebook, Instagram, Twitter, TED talks, LinkedIn
• Reach the target group with the right tools and channels	• Interact and engage through innovative methods	• Personalized learning	• Use channels that are the most popular

Source: Navikienė Z., 2022.

Digital platforms can connect educators and learners from around the world, fostering cross-cultural understanding and expanding the scope of adult education. Digital tools can

sometimes present technical challenges. Educators with digital literacy can troubleshoot issues and solve problems independently, ensuring a smooth learning experience for their learners. Many digital platforms provide data on learners' progress and engagement. Educators with digital literacy can analyze this data to make informed instructional decisions and identify areas for improvement. Comprehending basic online security and privacy principles should be known by each adult educator. Educators can teach learners about responsible online behaviour, privacy, and digital ethics as part of their curriculum. Familiarize yourself with data protection regulations and ensure participant data is handled responsibly. Educate participants about best practices for maintaining their privacy and security online.

Digital literacy enables educators to participate in online courses, webinars, and communities, fostering their professional growth. Digital literacy equips adult educators with the skills and confidence needed to leverage technology effectively, adapt to changing educational landscapes, and provide high-quality learning experiences for adult learners in a digital age.

Adult educators' competence in **digital inclusion** should ensure that digital resources and learning materials are accessible to all learners. Adapt facilitation methods to accommodate participants with varying levels of digital literacy. Fostering an inclusive and culturally sensitive digital learning environment should be a priority of each adult educator. Adapt facilitation approaches to respect diverse backgrounds and perspectives.

Adult educators should be able to identify and select appropriate digital tools for different learning objectives, integrate multimedia elements into lessons for enhanced engagement and foster digital literacy and critical thinking skills in learners. In the 21st century visualization is one of the attractive learning elements, that's why adult educators should be able to develop visually engaging content (presentations using tools like PowerPoint or Google Slides or others), create instructional videos using screen recording and video editing software, design visually appealing educational materials using graphic design tools. Curate relevant digital resources and materials for participants to access before, during, and after sessions. Organize and share links, articles, videos, and other multimedia content to enhance learning experiences.

Adult educators' digital competence should demonstrate an understanding of the principles of universal learning design (UDL) and accommodate diverse learning needs and preferences using digital tools. Ensure that all participants have access to the necessary digital tools and

resources. Educate learners about online safety, digital footprints, and cyberbullying. Implement best practices for protecting personal and sensitive data. Safeguard digital learning environments against potential threats.

Digital wellness and work-leisure balance should build and maintain a healthy relationship with digital technologies to prevent burnout. Managing screen time, practising digital detox, and prioritizing offline interactions. Fostering a positive digital presence while managing potential negative effects.

4.3.   Andragogical dimension

Andragogy is a theory of adult education that focuses on the unique characteristics and needs of adult learners and provides a framework for designing and delivering effective education for adults. Unlike pedagogy, which is the approach to teaching children, andragogy specifically addresses the learning principles that are relevant to adults. It's important to note that andragogy is not the only theory of adult education, and different theories and approaches can be combined to create effective educational experiences for adult learners. Andragogy framework based on understanding and addressing the needs of adult learners in educational settings.

Adult educators digital map the third dimension after professional/qualification. Digital literacy is andragogical competency and structure (Figure 4). Educators should understand various teaching and learning strategies suitable for adult learners. They should be able to adapt their methods to accommodate different learning styles, preferences, and paces.

Figure 4. Adult educators' digital competence map pedagogical dimension
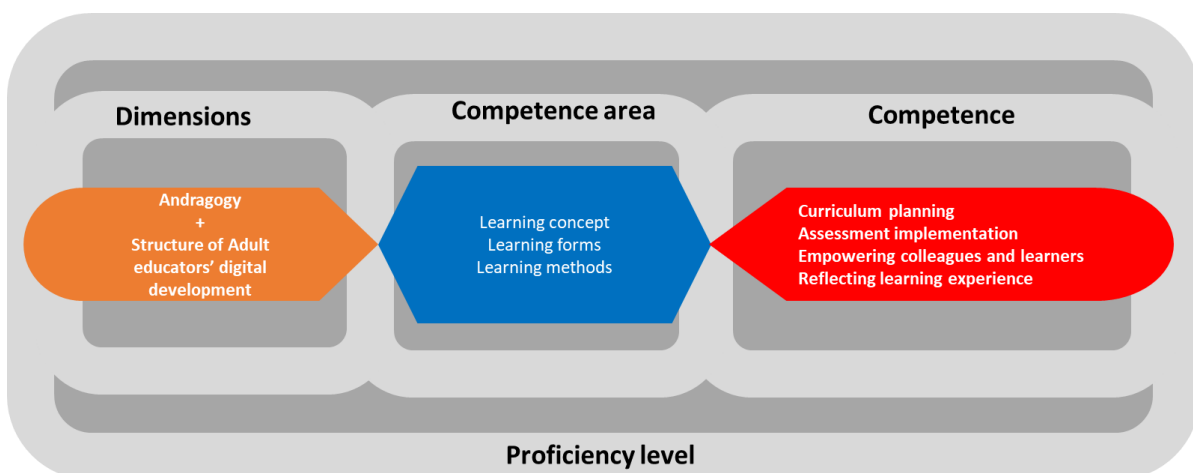
Within the context of Andragogy and the Structure of Adult Educators' Digital Development, comprehensive definitions for the three areas of competencies related to the key competencies that adult educators should possess in the realm of digital issues are provided below:

1. **Learning Concept**. The learning concept refers to the foundational understanding and philosophy that underpin an adult educator's approach to teaching and learning in the digital age. It encompasses their awareness of adult learning principles and recognising that adult learners bring unique experiences, motivations, and needs to the educational process. Adult educators with a well-defined learning concept understand the importance of learner-centered instruction, self-directed learning, and the integration of technology as a tool to enhance and support adult learning. They know how adults learn best in digital environments and tailor their teaching strategies accordingly.

2. **Learning Forms**. Learning forms pertain to the various modes and formats through which adult education occurs in the digital realm. It includes a broad spectrum of learning modalities, such as online courses, webinars, blended learning, virtual classrooms, and self-paced e-learning modules. Competent adult educators in this domain are proficient in selecting and designing appropriate learning forms that align with the specific goals, content, and learner characteristics. They can navigate the complexities of digital learning environments, considering factors like accessibility, engagement, and interaction to create effective and meaningful learning experiences.

3. **Learning Methods**. Learning methods encompass the strategies, techniques, and instructional approaches adult educators employ to facilitate learning in digital settings. It includes methods for content delivery, interaction, assessment, and feedback. Competent educators in this area have a repertoire of effective teaching methods tailored to adult learners' preferences and needs in the digital context. These methods may include active learning, problem-based learning, peer collaboration, gamification, and flipped classroom approaches. Educators adept in learning methods can choose and adapt these techniques to optimally engage adult learners and promote meaningful learning outcomes in digital environments.

These competencies collectively enable adult educators to navigate the complexities of digital education, adapt their pedagogical approaches to suit the needs of adult learners and create compelling, learner-centred, and technology-enhanced learning experiences in the digital realm.

These three areas manifest as four specific competencies:

1. **Curriculum Planning**. Curriculum planning is the systematic process through which adult educators design and organize educational content, activities, and resources to achieve specific learning objectives in digital contexts. It involves identifying learning goals, selecting appropriate digital resources, designing learning pathways, and

creating a coherent and engaging educational experience for adult learners. Effective curriculum planning in the digital age includes considerations for integrating technology, alignment with adult learners' needs and goals, and flexibility to adapt to changing circumstances and learner feedback.

2. **Assessment Implementation**. Assessment implementation involves strategically deploying various assessment methods and tools to evaluate adult learners' progress and achievements in digital learning environments. This competency encompasses designing assessments that align with learning outcomes, providing clear instructions, and using technology effectively to collect, analyse, and interpret assessment data. It also entails fostering a balanced assessment approach that includes formative and summative assessments, self-assessment, peer assessment, and feedback mechanisms to support adult learners' growth and development in digital education.

3. **Empowering Colleagues and Learners**. Empowering colleagues and learners is the competency that focuses on creating a supportive and inclusive digital learning community. Adult educators with this skill empower their peers and learners by fostering a collaborative and participatory environment. They encourage colleagues to share insights and best practices, offer guidance and mentorship, and create a culture of continuous learning and improvement. This involves motivating adult learners to take ownership of their learning journey, providing them with resources and support, and promoting self-directed learning in the digital space.

4. **Reflecting on Learning Experience.** Reflecting on the learning experience is critically evaluating and improving one's teaching methods, content delivery, and digital engagement strategies. Adult educators who possess this competency regularly engage in self-reflection and seek feedback from learners to enhance the effectiveness of their digital teaching. It includes assessing the impact of instructional choices, adapting to emerging technologies, and making data-informed decisions to refine the overall learning experience. Reflective practitioners are committed to continuous improvement and the delivery of high-quality digital education.

These competencies collectively enable adult educators to design, deliver, and assess practical digital learning experiences, create supportive learning communities, and continually improve their teaching practices to meet the evolving needs of adult learners in the digital age.

Throughout this section, these aspects are analyzed in a comprehensive and integrated manner.

Adult educators need to be skilled facilitators who can guide discussions, encourage participation, and create a comfortable and respectful environment that promotes active learning. Effective verbal and nonverbal communication is essential for conveying information, answering questions, and fostering understanding among adult learners. Adult learners have different motivations and life experiences that influence their learning journey. Educators must be empathetic and understand the developmental stages of adulthood to

provide appropriate support. Assessment and feedback ability is important for adult educators to help learners accurately measure learning outcomes and provide constructive feedback that helps them track their progress and identify areas for improvement. Design and administer online quizzes and assessments. Provide constructive feedback on digital assignments and discussions, and use rubrics and grading tools within online platforms.

Encouraging adult learners to think critically and solve problems enhances their ability to apply knowledge in real-life situations. Educators should model and foster these skills. Adult learners come from various cultural backgrounds. Educators need to be sensitive to diversity and create an inclusive learning environment that respects and values different perspectives to be aware of cultural diversity competence importance.

Adult educators should be able to identify and select appropriate digital tools for different learning objectives, integrate multimedia elements into lessons for enhanced engagement and foster digital literacy and critical thinking skills in learners. "Adult educator's digital competencies should be at an advanced level to ensure inclusive, attractive, interactive adult learners' learning experience. Adult educator professional and digital skills competencies importance correlate with adult learners' engagement and motivation to follow online courses (Navikienė, 2022)".

Table 3. Structure of adult educators' digital competencies development

Competences area	Competences	Learning online roles	Methods	Tools
Andragogical digital approach to the content				
Andragogical digital curriculum planning	• Exploration needs of a target group • Identify and use connect andragogy practice with digital skills	• Adult educators/ learners' etiquette and communication rules	• Learning approach • Learning content • Main messages	• Presentations • Agreements • Involvement of learners • Test
Andragogical digital content creation	• Integrate andragogy concept and methods • Empower learners • Supporting vulnerable adults using digital learning		• Visualization • Interactive tools • Digital Marketing	• Digital platforms, MOOC
Andragogical Digital content implementation	• Ability to choose and use digital tools • Facilitating online learning		• Principles of working with different age adults	• Interaction using digital tools
Assessment/ Evaluation	Assessment/ Evaluation		Feedback	Reflection
Adult educator's digital competences				

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Competences area	Competences	Learning online roles	Methods	Tools
Advanced level of adult educators' digital competencies	• Increase adult educators' confidence in the use of digital technology • Support "Digital immigrants" • Increase motivation to use digital tools	• Supportive learning environment	• Interact and engage through innovative methods	• Digital information management tools
Assessment/ Evaluation	Assessment/ Evaluation	Evaluation	Feedback	Reflection

Source: Živilė Navikienė, 2022

Lifelong learning competence and professional, and personal development ensure that adult educators stay updated on the latest teaching methodologies, research, and best practices. Adult learners have different schedules and commitments. Educators must be flexible in accommodating various learning formats, such as in-person, online, or blended approaches. Quickly adapt to changes in technology and adjust facilitation techniques accordingly. Adult educators should manage unexpected technical issues during sessions with composure and problem-solving skills.

Regularly reflecting on teaching methods, interactions, and outcomes helps educators identify areas for improvement and refine their approach over time. Planning and managing the time allocated for lessons, activities, and assessments is crucial for maintaining a structured and organized learning experience. Adult learners often have personal goals for learning. Educators should be skilled at motivating and inspiring learners to stay engaged and committed to their learning journey. Overall, a combination of subject knowledge, andragogical expertise, interpersonal skills, and a deep understanding of adult learners' needs contributes to the competence of adult educators and their ability to create meaningful and effective learning experiences. Lifelong learning competence helps to stay updated on emerging **digital facilitation** tools and techniques and seek out professional development opportunities related to **digital facilitation** skills.

The digital competencies map tailored for adult educators (facilitators) defines main three dimensions - professional/qualification, digital literacy and andragogical. The map encompasses skills necessary to effectively guide and engage adult learners in a digital environment. These dimensions encompass a wide range of skills and knowledge areas that

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collectively define an individual's digital competencies. Developing proficiency in each dimension contributes to a well-rounded ability to navigate and thrive in the digital age.

This digital competencies map equips/guides adult facilitators with the skills needed to effectively engage and guide learners in various digital settings. Facilitators need to remain adaptable, empathetic, and proficient in using digital tools to create meaningful and impactful learning experiences.

4.4.   Proficiency Level

As an innovative element of the DiGin project, we are introducing a proficiency level determination framework for adult educators in digital matters. This framework will consider two key parameters: firstly, the proposal put forth by Eurostat, and secondly, the competence map developed within the project itself. By combining these two elements, we aim to establish robust mechanisms for assessing the proficiency levels of adult educators in digital issues. This assessment will differentiate between basic, intermediate, and advanced proficiency levels, with the introduction of an intermediate level, which extends beyond the Eurostat proposal that solely recognizes basic and advanced levels. This approach will provide a more nuanced and comprehensive understanding of the digital competencies of adult educators, thereby enhancing the overall quality and effectiveness of digital education in adult learning contexts.

4.4.1.   Eurostat Framework

Following Eurostat, digital skills indicators are composite indicators based on selected activities related to internet or software use performed by individuals aged 16-74 in four specific areas (information, communication, problem-solving, and software skills). It is assumed that individuals who have performed certain activities have the corresponding skills. Therefore, the indicators can be considered as a proxy of the digital competencies and skills of individuals.

According to the variety or complexity of activities performed, two levels of skills ("basic" and "above basic") are computed for each of the four dimensions. Finally, based on the

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component indicators, an overall digital skills indicator is calculated as a proxy of the digital competencies and skills of individuals ("no skills", "low", "basic" or "above basic").

4.4.1.1.   Information skills

Definition in Digital Competence Framework: identify, locate, retrieve, store, organise and analyse digital information, judging its relevance and purpose.

- Activities used for calculating the information skills:
  - Copied or moved files or folders;
  - Saved files on Internet storage space;
  - Obtained information from public authorities/services' websites;
  - Finding information about goods or services;
  - Seeking health-related information.
- Levels of information skills
  - Basic: one activity;
  - Above basic: more than one activity.

4.4.1.2.   Communication skills

Definition in Digital Competence Framework: communicate in digital environments, share resources through online tools, link with others and collaborate through digital tools, interact with and participate in communities and networks, and cross-cultural awareness.

- Activities used for calculating the communication skills:
  - Sending/receiving emails;
  - Participating in social networks;
  - Telephoning/video calls over the internet;
  - Uploading self-created content to any website to be shared.
- Levels of communication skills
  - Basic: one activity;
  - Above basic: more than one activity.

4.4.1.3.   Problem solving skills

Definition in Digital Competence Framework: identify digital needs and resources, make informed decisions as to which are the most appropriate digital tools according to the purpose or need, solve conceptual problems through digital means, creatively use technologies, solve technical problems, and update one's own and others' competences.

- Activities used for calculating the problem-solving skills:
  - List A – Problem solving
    - ✓ Transferring files between computers or other devices;
    - ✓ Installing software and applications (apps);

- ✓ Changing the settings of any software, including operational systems or security programs.
  - List B – Familiarity with online services
    - ✓ Online purchases (in the last 12 months);
    - ✓ Selling online;
    - ✓ Used online learning resources;
    - ✓ Internet banking.
- Levels of problem-solving skills
  - Basic: one or more activities only from A or only from B (I_DSK_PS_B);
  - Above basic: at least one activity from A and B (I_DSK_PS_AB).

4.4.1.4. Software skills (for content manipulation)

Definition in Digital Competence Framework: Create and edit new content (from word processing to images and video); integrate and re-elaborate previous knowledge and content; produce creative expressions, media outputs and programming; deal with and apply intellectual property rights and licences.

- Activities used for calculating the software skills (for content manipulation):
  - List A
    - ✓ Used word processing software;
    - ✓ Used spreadsheet software;
    - ✓ Used software to edit photos, video or audio files.
  - List B
    - ✓ Created presentation or document integrating text, pictures, tables or charts;
    - ✓ Used advanced functions of the spreadsheet to organise and analyse data (sorting, filtering, using formulas, creating charts);
    - ✓ Have written code in a programming language.
- Levels of software skills
  - Basic: one or more activities from list A and none from list B;
  - Above basic: at least one activity from list B.

4.4.1.5. Overall digital skill indicator

- Individuals with "above basic" level of skills:
  - "above basic" in all 4 domains.
- Individuals with a "basic" level of skills:
  - at least one "basic" but no "no skills" in all 4 domains.
- Individuals with "low" level of skills (missing some type of basic skills):
  - from one to three "no skills" in the four domains.
- Individuals with "no skills":
  - Four "no skills" (no activities performed in all four domains, despite having used the internet at least once during the last 3 months).
- Individuals for whom the digital skills could not be assessed:
  - Individuals that have not used the internet in the last 3 months).

4.4.2. DIGIN Innovative Proficiency Level

Next, taking as a reference the competence map and the Eurostat proposal, a set of indicators is proposed for measuring the competencies considered in this project (Figure 5).

Figure 5. Proficiency Level Indicators
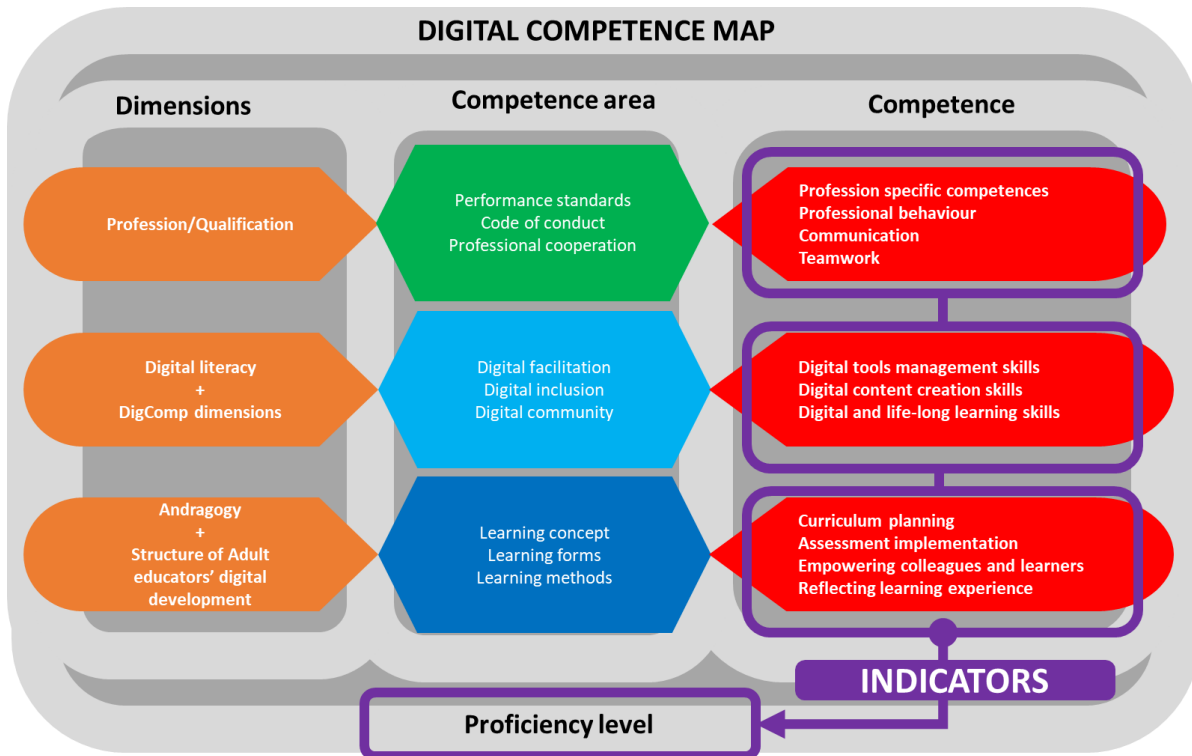
4.4.2.1. Profession/Qualification (indicators)

a) Profession specific competences
1. **Digital Skill Development Programs**:
   - Have you completed formal training or professional development programs specific to digital teaching and learning? (1: No, 2: Basic training, 3: Advanced training)
2. **Integration of Digital Tools**:
   - How frequently do you incorporate digital tools and resources into your teaching practices? (1: Rarely or never, 2: Occasionally, 3: Routinely)
3. **Adaptation to Digital Pedagogies**:
   - To what extent have you transitioned from traditional teaching methods to digital pedagogies? (1: Not at all, 2: Somewhat, 3: Completely)
4. **Digital Resource Creation**:
   - Do you actively create and share digital educational resources, such as online courses, e-books, or multimedia content, tailored to the needs of adult learners? (1: No, 2: Rarely, 3: Yes, regularly)

5. **Learner-Centered Approach**:
   - How would you describe your approach to ensuring a learner-centred environment in your digital teaching? (1: Not learner-centred, 2: Somewhat learner-centred, 3: Completely learner-centred)
6. **Digital Collaboration**:
   - Do you actively participate in digital collaborative initiatives, including online communities of practice, webinars, or collaborative projects? (1: No, 2: Rarely, 3: Yes, regularly)
7. **Assessment of Digital Competence**:
   - How would you rate your digital competence, considering your ability to navigate digital environments, use technology for teaching, and adapt to emerging digital trends? (1: Low competence, 2: Moderate competence, 3: High competence)
8. **Digital Learning Outcomes**:
   - Have you observed tangible improvements in your adult learners' digital literacy and problem-solving skills as a result of your digital teaching efforts? (1: No improvement, 2: Minor improvement, 3: Significant improvement)

These proposed indicators cover a range of competencies in digital education for adult educators, aligning.

b) Professional behaviour
1. **Ethical Conduct**:
   - Self-assessment by adult educators of their adherence to ethical standards in digital education, using a scale from 1 (low) to 3 (high).
2. **Professional Collaboration**:
   - Frequency of participation in collaborative projects or networks related to digital education, demonstrating professional engagement (1 low, 2 medium, 3 high).
3. **Continuous Self-Reflection**:
   - Frequency of self-reflection on teaching practices, including the consideration of ethical, cultural, and pedagogical aspects in digital education (1 low, 2 medium, 3 high).
4. **Continuous Self-Reflection**:
   - Frequency of self-reflection on teaching practices, including the consideration of ethical, cultural, and pedagogical aspects in digital education. (1 low, 2 medium, 3 high).
5. **Learner-Centred Approach**:
   - Self-reported commitment to a learner-centred approach in digital education, assessed on a scale from 1 (low) to 3 (high).
6. **Inclusivity and Diversity Awareness**:
   - Self-assessment of the level of awareness and inclusivity in addressing diverse learner needs in digital education, using a scale from 1 (low) to 3 (high).

These proposed indicators aim to assess the "Professional Behaviour" competency among adult educators in digital education, ensuring that they adhere to ethical standards, engage in professional development, and create inclusive and learner-centred digital learning environments.

c) Communication

1. **Clear Communication**:
   - Self-assessment by adult educators of their ability to communicate information clearly in digital education settings (1: Low, 2: Moderate, 3: High).
2. **Feedback Effectiveness**:
   - Self-reported effectiveness of feedback provided to adult learners in digital learning environments (1: Ineffective, 2: Moderately Effective, 3: Highly Effective).
3. **Learner Engagement**:
   - Evaluation of learner engagement in digital learning activities, as reported by adult educators (1: Low Engagement, 2: Moderate Engagement, 3: High Engagement).
4. **Digital Communication Tools**:
   - Self-assessment of proficiency in using digital communication tools (e.g., online discussion forums, video conferencing) for effective interaction with adult learners (1: Limited Proficiency, 2: Moderate Proficiency, 3: Advanced Proficiency).
5. **Active Listening Skills**:
   - Self-assessment of active listening skills when engaging with adult learners in digital contexts (1: Limited Skill, 2: Moderate Skill, 3: Advanced Skill).
6. **Adaptation to Audience Needs**:
   - Self-reported ability to adapt communication style and content to meet the diverse needs of adult learners in digital education (1: Limited Adaptation, 2: Moderate Adaptation, 3: Advanced Adaptation).

These proposed indicators aim to assess the "Communication" competency among adult educators in digital education, focusing on their ability to communicate, engage learners effectively, and adapt communication strategies to meet learner needs.

d) Teamwork
1. **Collaborative Projects**:
   - Self-reported participation in collaborative projects or teams focused on digital education, with a rating of how effectively teamwork was executed (1: Ineffective, 2: Moderately Effective, 3: Highly Effective).
2. **Peer Collaboration**:

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- Self-assessment of the ability to collaborate effectively with peers, including other educators, in designing and delivering digital learning experiences (1: Limited Collaboration, 2: Moderate Collaboration, 3: Advanced Collaboration).
3. **Support for Colleagues**:
   - Self-reported willingness and ability to provide support and guidance to colleagues in digital education (1: Limited Support, 2: Moderate Support, 3: Strong Support).
4. **Learner-Centered Teamwork**:
   - Evaluation of the extent to which collaborative efforts among educators prioritize a learner-centered approach in digital education (1: Low Focus on Learners, 2: Moderate Focus on Learners, 3: High Focus on Learners).
5. **Conflict Resolution**:
   - Self-assessment of the ability to effectively resolve conflicts or disagreements within a team working on digital education initiatives (1: Limited Resolution Skills, 2: Moderate Resolution Skills, 3: Advanced Resolution Skills).

These proposed indicators aim to assess the "Teamwork" competency among adult educators in digital education, focusing on their ability to collaborate effectively, support colleagues, and prioritize a learner-centred approach while resolving conflicts when necessary.

4.4.2.2. Digital literacy + DigComp dimensions (indicators)

a) Digital tools management skills
1. **Proficiency in Digital Tools**:
   - Self-assessment of proficiency in using a variety of digital tools and applications for teaching and learning (1: Limited Proficiency, 2: Moderate Proficiency, 3: Advanced Proficiency).
2. **Integration of Digital Tools**:
   - Evaluation of how effectively digital tools are integrated into instructional practices to enhance the learning experience (1: Limited Integration, 2: Moderate Integration, 3: Advanced Integration).
3. **Adaptation to Technology Trends**:
   - Self-reported ability to adapt to emerging technology trends and incorporate them into teaching practices (1: Limited Adaptation, 2: Moderate Adaptation, 3: Advanced Adaptation).
4. **Resource Creation Skills**:
   - Self-assessment of the ability to create digital educational resources (e.g., online courses, multimedia materials) that are engaging and effective for adult learners (1: Limited Skills, 2: Moderate Skills, 3: Advanced Skills).
5. **Digital Tool Selection**:
   - Evaluation of the ability to select appropriate digital tools and resources that align with specific learning objectives and learner needs (1: Limited Selection Skills, 2: Moderate Selection Skills, 3: Advanced Selection Skills).
6. **Technology Troubleshooting**:

- Self-assessment of the ability to troubleshoot common technical issues that may arise during digital education delivery (1: Limited Troubleshooting Skills, 2: Moderate Troubleshooting Skills, 3: Advanced Troubleshooting Skills).

These proposed indicators aim to assess the competency of "Digital Tools Management Skills" among adult educators in digital education, focusing on their proficiency in using digital tools, their ability to integrate technology effectively, and their adaptability to emerging trends in the digital landscape.

b) Digital content creation skills
1. **Multimedia Content Creation**:
   - Self-assessment of the ability to create engaging multimedia content (e.g., videos, interactive presentations) for digital learning purposes (1: Limited Skills, 2: Moderate Skills, 3: Advanced Skills).
2. **Online Course Development**:
   - Evaluation of proficiency in designing and developing effective online courses tailored to the needs of adult learners (1: Limited Proficiency, 2: Moderate Proficiency, 3: Advanced Proficiency).
3. **Content Relevance**:
   - Assessment of the extent to which created digital content aligns with learning objectives and addresses the specific needs of adult learners (1: Limited Alignment, 2: Moderate Alignment, 3: High Alignment).
4. **Accessibility Considerations**:
   - Self-reported consideration of accessibility principles when creating digital content to ensure it is inclusive and can be accessed by all learners (1: Limited Consideration, 2: Moderate Consideration, 3: Advanced Consideration).
5. **Content Interactivity**:
   - Self-assessment of the level of interactivity and engagement incorporated into digital learning materials (1: Low Interactivity, 2: Moderate Interactivity, 3: High Interactivity).
6. **Incorporation of Assessments**:
   - Evaluation of the inclusion of effective assessments within digital content to measure learner understanding and progress (1: Limited Assessment, 2: Moderate Assessment, 3: Advanced Assessment).

These proposed indicators aim to assess the competency of "Digital Content Creation Skills" among adult educators in digital education, focusing on their ability to create engaging, relevant, and accessible digital learning materials that meet the needs of adult learners.

C) Digital and life-long learning skills
1. **Commitment to Continuous Learning**:
   - Self-reported commitment to continuous learning and professional development in the field of digital education (1: Limited Commitment, 2: Moderate Commitment, 3: Strong Commitment).

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2. **Adaptation to Emerging Technologies**:
   - Self-assessment of the ability to adapt to and embrace emerging digital technologies and pedagogical trends (1: Limited Adaptation, 2: Moderate Adaptation, 3: Advanced Adaptation).
3. **Self-Directed Learning**:
   - Assessment of the extent to which adult educators actively engage in self-directed learning to enhance their digital and pedagogical skills (1: Limited Self-Directed Learning, 2: Moderate Self-Directed Learning, 3: Strong Self-Directed Learning).
4. **Modeling Lifelong Learning**:
   - Self-reported practice of modelling lifelong learning behaviours to inspire adult learners to pursue ongoing education (1: Limited Modelling, 2: Moderate Modelling, 3: Strong Modelling).
5. **Digital Literacy Improvement**:
   - Self-assessment of the extent to which adult educators have improved their digital literacy skills over time (1: Limited Improvement, 2: Moderate Improvement, 3: Significant Improvement).
6. **Awareness of Emerging Pedagogical Approaches**:
   - Self-reported awareness and understanding of emerging pedagogical approaches in the context of digital education (1: Limited Awareness, 2: Moderate Awareness, 3: High Awareness).

These proposed indicators aim to assess the competency of "Digital and Life-Long Learning Skills" among adult educators in digital education, focusing on their commitment to continuous learning, adaptability to emerging technologies, and their role in modelling and promoting lifelong learning for their adult learners.

4.4.2.3. Andragogy + Structure of Adult educators' digital development (indicators)

a) Curriculum planning
1. **Alignment with Learning Objectives**:
   - Evaluation of the extent to which digital curriculum planning aligns with specific learning objectives and goals (1: Limited Alignment, 2: Moderate Alignment, 3: High Alignment).
2. **Learner-Centered Approach**:
   - Self-reported commitment to a learner-centred approach in digital curriculum planning (1: Limited Focus on Learners, 2: Moderate Focus on Learners, 3: High Focus on Learners).
3. **Effective Resource Selection**:
   - Assessment of the ability to select appropriate digital resources, materials, and tools that enhance the curriculum (1: Limited Selection Skills, 2: Moderate Selection Skills, 3: Advanced Selection Skills).
4. **Assessment Integration**:

- Self-assessment of the effective integration of assessments into the curriculum to measure learner progress and understanding (1: Limited Integration, 2: Moderate Integration, 3: Advanced Integration).

5. **Flexibility and Adaptation**:
   - Evaluation of the curriculum's flexibility to adapt to changing learner needs and evolving digital trends (1: Limited Flexibility, 2: Moderate Flexibility, 3: High Flexibility).

6. **Feedback Utilization**:
   - Self-reported utilization of feedback from adult learners to refine and improve the digital curriculum (1: Limited Utilization, 2: Moderate Utilization, 3: Advanced Utilization).

These proposed indicators aim to assess the competency of "Curriculum Planning" among adult educators in digital education, focusing on the alignment of curriculum with learning objectives, learner-centred approaches, effective resource selection, and adaptability to create meaningful and effective digital learning experiences.

b) Assessment Implementation
1. **Alignment with Learning Outcomes**:
   - Evaluation of the alignment between assessments and intended learning outcomes within digital education (1: Limited Alignment, 2: Moderate Alignment, 3: High Alignment).

2. **Formative and Summative Assessment Use**:
   - Self-reported use and balance of both formative and summative assessments to support adult learners' growth (1: Limited Use, 2: Moderate Use, 3: Balanced Use).

3. **Variety of Assessment Methods**:
   - Assessment of the use of a variety of assessment methods, including self-assessment, peer assessment, and traditional assessments, in digital education (1: Limited Variety, 2: Moderate Variety, 3: High Variety).

4. **Feedback and Guidance**:
   - Self-reported provision of timely and constructive feedback to adult learners based on assessment results (1: Limited Feedback, 2: Moderate Feedback, 3: Effective Feedback).

5. **Assessment Data Utilization**:
   - Evaluation of the extent to which assessment data is effectively used to adapt teaching methods and improve the learning experience (1: Limited Utilization, 2: Moderate Utilization, 3: Advanced Utilization).

6. **Accessibility and Inclusivity in Assessment**:
   - Self-assessment of efforts to ensure that assessments are accessible and inclusive for all adult learners (1: Limited Efforts, 2: Moderate Efforts, 3: High Efforts).

These proposed indicators aim to assess the competency of "Assessment Implementation" among adult educators in digital education, focusing on the alignment of assessments with learning outcomes, the variety of assessment methods used, and the effective use of assessment data to enhance the learning experience for adult learners.

c) Empowering colleagues and learners
1. **Support for Colleagues**:
   - Self-assessment of the willingness and ability to provide support and guidance to colleagues in their professional development in digital education (1: Limited Support, 2: Moderate Support, 3: Strong Support).
2. **Peer Collaboration**:
   - Evaluation of the extent to which adult educators collaborate with peers and share knowledge and best practices related to digital education (1: Limited Collaboration, 2: Moderate Collaboration, 3: Strong Collaboration).
3. **Empowering Adult Learners**:
   - Self-reported efforts to empower adult learners by promoting their active participation, self-direction, and confidence in digital learning environments (1: Limited Efforts, 2: Moderate Efforts, 3: Strong Efforts).
4. **Promotion of Lifelong Learning**:
   - Assessment of actions taken to promote the concept of lifelong learning among both colleagues and adult learners (1: Limited Promotion, 2: Moderate Promotion, 3: Strong Promotion).
5. **Inclusive Teaching Practices**:
   - Self-assessment of the promotion of inclusive teaching practices that address diverse learner needs and abilities in digital education (1: Limited Promotion, 2: Moderate Promotion, 3: Strong Promotion).
6. **Recognition of Colleagues' Contributions**:
   - Evaluation of efforts to recognise and celebrate the achievements and contributions of colleagues in the field of digital education (1: Limited Recognition, 2: Moderate Recognition, 3: Strong Recognition).

These proposed indicators aim to assess the competency of "Empowering Colleagues and Learners" among adult educators in digital education, focusing on their support for colleagues, collaboration with peers, and efforts to empower and promote lifelong learning among adult learners

d) Reflecting learning experience
1. **Self-Reflection Practices**:

- Self-assessment of the frequency and depth of personal self-reflection on teaching practices and learner experiences in digital education (1: Limited Self-Reflection, 2: Moderate Self-Reflection, 3: High Self-Reflection).

2. **Feedback Utilization**:
    - Evaluation of the extent to which feedback from adult learners is actively used to make improvements in digital teaching methods and content (1: Limited Utilization, 2: Moderate Utilization, 3: Advanced Utilization).

3. **Continuous Improvement Efforts**:
    - Self-reported efforts and commitment to continuously improve teaching practices and learning experiences in digital education (1: Limited Efforts, 2: Moderate Efforts, 3: Strong Efforts).

4. **Assessment of Teaching Strategies**:
    - Self-assessment of the effectiveness of teaching strategies used in digital education and the willingness to adapt based on insights gained (1: Limited Assessment, 2: Moderate Assessment, 3: Advanced Assessment).

5. **Learner-Centred Focus**:
    - Evaluation of the extent to which reflection includes a focus on ensuring a learner-centred approach in digital education (1: Limited Focus, 2: Moderate Focus, 3: High Focus).

6. **Peer Feedback and Collaboration**:
    - Assessment of the engagement in peer feedback and collaborative reflection practices to enhance teaching and learning in digital education (1: Limited Engagement, 2: Moderate Engagement, 3: Strong Engagement).

These proposed indicators aim to assess the competency of "Reflecting Learning Experience" among adult educators in digital education, focusing on their self-reflection practices, feedback utilization, and commitment to continuous improvement, with a scale from 1 to 3 indicating the level of proficiency in these areas.

4.4.3. Overal evaluation

Once an educator self-assesses or is evaluated by an institution, it will be possible to calculate the average value for each competence the overall value for each dimension or the overall total value. To determine the Basic, Intermediate, or Advanced level, the following approach will be used: between 1 and 1.4999 is considered Basic level, between 1.5 and 2.4999 is considered Intermediate level, and between 2.5 and 3 is considered Advanced level.

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5. Findings, Recommendations and Conclusions

Below is a summary of the main findings, recommendations, and conclusions of the report obtained by experts and authors. The full version is included in Annex 1.

5.1. Findings. Enhancing Digital Education for Adult Educators:

A Comprehensive Analysis

The COVID-19 pandemic has disrupted nearly every facet of our lives, and its impact on education has been particularly profound. As the world adapted to remote learning and digital platforms, the spotlight was cast upon the digital divide, underscoring the need for rapid advancements in digital education. The European Commission (EC) recognized the urgency of this situation and recommended accelerating the digital transition while prioritizing investments in digital learning infrastructure and technology. In response to these challenges, a comprehensive study was conducted, resulting in a myriad of findings that shed light on the current state of digital education for adult educators and learners.

1. Quality of Online Pedagogy
   While the transition to online education was a necessity during the pandemic, the findings reveal that the quality of online pedagogy has often been a secondary concern. Many educational institutions focus on the delivery of content without giving due attention to the pedagogical aspects of the online learning experience. This issue highlights an urgent need to improve the quality of instructional design in digital education. Effective digital pedagogy is essential to ensure that online learning experiences are engaging, interactive, and conducive to effective learning outcomes.
2. Competence Map for Digital Facilitators
   One innovative and necessary aspect of this study is the development of a competence map for digital facilitators working with adult learners. This map identifies the skills and knowledge areas crucial for educators to effectively navigate the digital landscape. With the ever-evolving nature of technology, digital facilitators must possess the expertise to adapt and innovate in their instructional methods.
3. Digital Platforms and Learning Management Systems
   Online platforms and Learning Management Systems (LMS) play a pivotal role in adult education. They offer flexibility, personalization, and access to a vast array of educational content. However, these platforms also present challenges such as ensuring data privacy, combating fraud, and providing access to individuals with varying levels of technical skills.
4. Tailoring to Seniors' Needs
   To facilitate seniors' access to online education, platforms must focus on simplicity, technical assistance, and tools tailored to their unique needs. The study acknowledges the

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importance of step-by-step education, accessibility, social support, and content tailored to seniors' interests. Customized approaches are essential to ensuring that older adults can harness the benefits of digital education fully.

5. Utilization of VR and AR Tools

   Virtual and augmented reality (VR and AR) tools have found their way into adult education, offering engaging and interactive learning experiences. From language learning to medical simulations, these technologies hold immense potential. Notably, seniors stand to gain numerous benefits, including therapies, mental training, virtual travel, social support, education, sound therapy, occupational therapy, and entertainment.

6. Digital Assessment and Evaluation

   Digital assessment tools are indispensable for tracking progress and evaluating the effectiveness of educational programs. From Learning Management Systems (LMS) to data analysis tools, these resources enable educators to tailor their teaching methods to meet individual needs and enhance overall learning outcomes.

7. Digital Literacy and Skills Resources

   Digital literacy is no longer a luxury but a necessity. The study highlights the importance of digital skills and provides a plethora of resources for individuals to enhance their digital literacy. These resources encompass online courses, libraries, programming platforms, government courses, podcasts, e-books, self-education tools, campaigns, local courses, discussion forums, and practice/project tools.

8. Webinars and Professional Development

   Webinars and online professional development opportunities have become integral for adult educators. These opportunities encompass webinars, educational platform courses, self-study materials, e-learning training, online learning communities, conferences, e-portfolios, course design, certification programs, communication and interpersonal skills training, and self-assessment for career planning.

9. Digital Collaboration and Communication Tools

   Effective communication and collaboration are essential in various contexts. The document lists numerous digital collaboration and communication tools, including Microsoft Teams, Slack, Zoom, Google Workspace, Trello, Asana, Notion, Jira, Basecamp, Discord, and Skype for Business. These tools facilitate seamless workflow and cooperation.

10. Benefits and Challenges for Seniors

    Digital collaboration and communication tools offer numerous benefits for seniors, including improved communication with family and friends, simplifying daily tasks, access to educational and entertainment opportunities, health support, online communities, skill development, and financial management. However, challenges include technical difficulties, online security risks, limited internet access, resistance to change, and addressing vision and hearing problems.

11. Online Networks and Communities

    Online networks and communities provide a platform for adult educators to connect, share knowledge, and collaborate. Examples include LinkedIn, Ning, Edutopia, Teachers Pay Teachers, Facebook Groups, Twitter, Adult Education Forum, Google+ Communities, Reddit, and Udemy for Instructors.

12. Digital Storytelling Tools

    Digital storytelling tools enable the creation and sharing of narratives in various forms. Tools such as StoryMapJS, Canva, Twine, Scrivener, Storybird, Padlet, Soundtrap, Adobe

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Spark, Audacity, Storytelling with Data, and Rise to empower educators to engage learners effectively.

13. Use of Storytelling in Senior Education
    Storytelling holds immense potential in senior education, preserving life experiences, motivating learning, supporting the learning process, creating social bonds, developing communication skills, offering therapy, keeping the brain active, and engaging in educational material creation.

14. Interactive and Multimedia Resources
    Adult learners benefit from a wide range of interactive and multimedia resources, including e-learning platforms, webinars, e-books, podcasts, educational games, math platforms, language learning platforms, simulators, educational social media, video courses, news portals, time management apps, and scientific databases.

15. Mobile Learning Applications
    Mobile learning applications have transformed adult education, offering accessibility and flexibility. Applications like Duolingo, Coursera, edX, LinkedIn Learning, Khan Academy, Udemy, Rosetta Stone, Quizlet, TED, MyFitnessPal, Tandem Language Exchange, Peak, Goodreads, Fitbit, and Notion empower learners to acquire knowledge on the go.

16. Online Resources for Recognition of Prior Learning
    Online resources for the recognition of prior learning (PLA) play a crucial role in validating individuals' skills and experiences. These resources include ACE Credit, CAEL, College Board CLEP, Portfolio Assessment Tools, eCampusOntario PLAR Toolkit, US Department of Labor's CareerOneStop, and university/college websites.

17. Digital Learning Measurement Tools
    Digital learning measurement tools, such as Learning Management Systems (LMS), Google Analytics for Education, and various apps, are instrumental in assessing and enhancing digital learning outcomes. These tools enable educators to monitor student progress, gather data, and adapt teaching methods to meet individual needs, ultimately improving learning outcomes.

18. Personalized AI-based Learning Resources
    Personalized AI-based learning resources are gaining popularity and effectiveness. These resources tailor educational content to the specific needs of adult learners, making learning more efficient and engaging.

19. Gamification Tools
    Gamification tools like Kahoot! and Quizlet significantly boost motivation and engagement among adult learners, making the learning process more enjoyable and effective.

20. Digital Tools for Seniors
    Seniors can also benefit from digital tools, such as tailored online courses, educational games, and virtual mentoring, to enhance their language skills and cognitive abilities.

21. Data Collection Method
    The study employed Google Forms to collect quantitative data through questionnaires for both trainers and learners across multiple countries. Convenience sampling was employed to distribute digital questionnaires through various means, including email, WhatsApp, and social networks.

22. Sample Size and Error
    The study gathered 245 valid surveys from learners and 144 from trainers, with sampling errors of ±6.39% and ±8.33%, respectively, at a 95.5% confidence level. Data collection took place in May 2023.

23. Digital Skills Training
Approximately 48.6% of respondents participated in activities or training to improve their digital skills. Varied participation rates among countries suggest differing levels of digital skills.

24. Digital Literacy Levels
The majority of respondents fell into the middle digital literacy levels, with significant numbers at the "Basic user" and "Independent user" levels. Notably, 14.7% reported never having used a computer, highlighting room for improvement.

25. Employment Status
The majority of respondents were pensioners/retired individuals (44.5%), with others being employed, self-employed, part-time workers, or unable to work.

26. Devices and Internet Usage
Smartphones were the most commonly used devices (90.2%), followed by laptops/desktop computers (67.8%). Tablets had the lowest usage (30.2%), with variations among countries.

27. Daily Digital Activities
Video calls and messaging with family and friends were the most common digital activities (76.7%), while online games and online training participation were less frequent (19.2% and 20.0%, respectively), with significant country-level variations.

28. Sources of Help for Digital Problems
Family members were the primary source of help for digital problems (78.8%), followed by friends (52.7%). Educators/trainers were less commonly sought for assistance (13.9%), with variations among countries.

29. Digital Issues Requiring Help
Respondents sought help for various digital issues, with online banking being the most common (43.7%). Writing emails had the lowest reported need for assistance (14.7%), with variations between countries.

30. Criteria for Evaluating Online Information
"Easy to understand" was the most important criterion when evaluating online information (74.7%), followed by "Accurate information" (63.7%). Country-wise variations indicated different priorities.

31. Differentiating Reliable Sources
A majority of respondents (54.3%) indicated that they try to be sceptical when differentiating between good and bad online sources. Other methods, such as checking credentials or affiliations, also had substantial affirmative responses.

32. Preferred Digital Tools
Communication applications like WhatsApp, Skype, and Zoom were widely used (73.5%). Information search engines (69.4%) and web browsers (63.3%) were also popular choices. However, online learning applications were less commonly used (29.4%).

33. Needs and Expectations
Respondents expressed various needs and expectations regarding the use of digital tools. The most common need was to improve confidence and safety when using digital tools (65.3%). These needs varied by country, with Spain emphasizing the need for more support and technical assistance.

34. Trainers' Digital Competence
The sample of trainers, spanning various countries, highlights the diverse landscape of digital competence among adult educators. The majority consider themselves at the

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intermediate level (46.5%), while others see themselves as advanced (31.9%), with no one reporting a lack of digital competence.

35. Devices and Digital Content in Training

Trainers commonly used laptops/desktop computers (62.5%), smartphones (59.0%), fixed internet connections (47.9%), mobile internet connections (40.3%), and a combination of these options (22.9%) for their work. Digital content included written texts (68.8%), images (65.3%), videos (66.7%), presentations (72.9%), and games (19.4%).

36. Challenges Faced by Trainers

Trainers faced various challenges, with the most common being a lack of knowledge or skills (46.5%). Other challenges included difficulties with internet access, device adequacy, confidence, motivation, support, and tool adaptation.

37. Overcoming Challenges

To overcome these challenges, trainers often sought information or tutorials (63.9%) and help from family, friends, or colleagues (53.5%).

38. Advantages and Risks for Trainers

The advantages of using digital tools in their work included improving work quality and efficiency (59.0%), expanding opportunities and resources (56.3%), facilitating communication and collaboration (63.2%), increasing satisfaction and recognition (42.4%), and developing new digital competencies and skills (55.6%). Trainers also faced risks, such as difficulty balancing work and personal life (56.3%), maintaining attention and concentration (46.5%), managing information (61.1%), protecting online security and privacy (55.6%), dealing with stress or anxiety (42.4%), and avoiding dependence or addiction (45.1%).

39. Trainers' Needs and Expectations

Trainers expressed needs and expectations concerning digital tools at work, including improving internet access (37.5%), acquiring or renewing digital devices (47.9%), learning or updating digital knowledge or skills (54.2%), increasing confidence and security (39.6%), enhancing motivation and interest (34.7%), receiving more support and technical assistance (48.6%), and adapting tools to personal needs or preferences (43.1%).

40. Digital Competence Map

The study introduces a comprehensive digital competence map for adult educators, encompassing professional/occupational competence, digital literacy based on the DigComp framework, and andragogy. This map defines the skills and knowledge areas necessary for the effective use of digital tools in adult education.

41. Importance of Professional Competence

The text highlights the significance of professional competence for adult educators, emphasizing the need for subject expertise to meet the diverse needs of adult learners.

42. Performance Standards and Code of Conduct

The document discusses the importance of performance standards and a code of conduct for adult educators to ensure quality instruction, ethical behaviour, and a respectful learning environment.

43. Professional Cooperation Competence

It mentions the importance of professional cooperation and "soft" skills like communication and teamwork for adult educators.

44. Ethical Standards

The text explores ethical considerations in digital education, including accessibility, privacy, content quality, ethical behaviour, intellectual property, assessment, and professional development.

45. Maintaining Confidentiality

It emphasizes the critical role of maintaining confidentiality in digital education, protecting personal information, and fostering trust among learners.

46. Respecting Boundaries

The text discusses the concept of respecting boundaries in digital education, including respecting learners' comfort levels with technology, promoting digital ethics, and ensuring inclusivity.

47. Promoting a Safe and Respectful Learning Environment

The text underscores the importance of creating a safe, inclusive, and respectful digital learning environment, addressing digital safety, inclusivity, digital etiquette, and emotional well-being.

48. Digital Competence Framework

The text introduces the DigComp framework, which outlines key elements of digital skills, including information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. It further extends this framework to create a digital competence map for adult educators.

49. Three Competency Areas

Within the digital competence map, three competency areas for adult educators are identified: Digital Facilitation, Digital Inclusion, and Digital Community. These areas are crucial for creating effective and inclusive learning environments in the digital age.

50. Specific Competencies

The text specifies three competencies within these areas: Digital Tools Management Skills, Digital Content Creation Skills, and Digital and Lifelong Learning Skills. These competencies encompass the ability to use digital tools effectively, create engaging digital content, and promote continuous learning.

51. Importance of Digital Literacy

The text underscores the importance of digital literacy for adult educators in today's technology-driven educational landscape. It emphasizes the need for educators to be proficient in using digital tools and platforms to enhance the learning experience.

52. Adaptation to Online Learning

Adult education is no longer limited to traditional classrooms, with online and blended learning becoming common. Educators need to adapt to these digital environments to engage learners effectively.

53. Continuous Learning

The digital landscape is constantly evolving, and educators must continuously update their knowledge and adapt to emerging technologies and trends. This highlights the importance of lifelong learning for both educators and learners.

54. Andragogical Framework

The text introduces andragogy as a theory of adult education that focuses on the unique characteristics and needs of adult learners. It emphasizes that andragogy addresses learning principles relevant to adults, distinguishing it from pedagogy, which pertains to teaching children.

55. Digital Competence in Andragogy

The digital competence of adult educators is considered an integral part of andragogy. Adult educators need to understand various teaching and learning strategies suitable for adult learners, adapt their methods to different learning styles, and recognize the importance of technology as a tool for adult learning.

56. Competencies Framework

    The text outlines a competencies framework for adult educators within the andragogical dimension. It defines three competency areas: Learning Concepts, Learning Forms, and Learning Methods, which collectively enable educators to navigate digital education effectively.

57. Specific Competencies

    Within these competency areas, four specific competencies are identified: Curriculum Planning, Assessment Implementation, Empowering Colleagues and Learners, and Reflecting on Learning Experience. These competencies enable educators to design, deliver, assess, and improve digital learning experiences.

58. Importance of Digital Competence

    The text emphasizes the importance of advanced digital competencies for adult educators in creating engaging and effective learning experiences for adult learners in the digital age.

59. Lifelong Learning Competence

    The text highlights the significance of lifelong learning competence for adult educators to stay updated on teaching methodologies, research, and best practices.

60. Proficiency Level Framework

    The DiGin project is introducing a proficiency level determination framework for adult educators in digital matters. This framework combines Eurostat's proposal with the competence map developed within the project to assess adult educators' digital proficiency comprehensively.

61. Eurostat Framework

    The Eurostat framework categorizes digital skills into four specific areas: information, communication, problem-solving, and software skills. It distinguishes between "basic" and "above basic" proficiency levels based on the variety and complexity of activities performed.

62. Intermediate Level

    The DiGin project proposes an intermediate proficiency level, which extends beyond Eurostat's basic and advanced levels. This additional level provides a more nuanced understanding of adult educators' digital competencies.

63. Overall Digital Skill Indicator

    The framework offers a way to assess individuals' overall digital skills based on their proficiency in the four domains (information, communication, problem-solving, and software skills). Categories include "above basic," "basic," "low," and "no skills."

64. Proposed Indicators

    The DiGin project proposes a set of indicators to measure competencies in digital education for adult educators. These indicators cover various aspects, including professional qualifications, professional behaviour, communication, teamwork, digital tools management skills, digital content creation skills, and digital and lifelong learning skills.

    In conclusion, the findings from the study on education for adult digitalization reveal a complex landscape of digital skills, needs, and challenges among both learners and trainers. The study emphasizes the importance of improving digital pedagogy, promoting

digital literacy, and enhancing the competence of adult educators to effectively navigate the digital age. It also underscores the significance of ethical considerations, including privacy and inclusivity, in the digital education landscape. The proposed digital competence map and proficiency level framework provide valuable tools for assessing and enhancing digital skills among adult educators, ultimately contributing to more effective and inclusive digital education for adults.

5.2. Recommendations

For Educators and Trainers:

1. Educators and trainers should gain new knowledge about instructional design methodology and utilize the toolbox of instruments provided to create engaging educational programs.
2. The competence map for digital facilitators and the toolbox of instruments should be adaptable to the understanding levels of learners in both online and offline education.
3. Encourage educators and trainers to participate in webinars, online courses, and other professional development opportunities to stay updated with educational trends and improve their teaching skills.
4. Invest in initiatives that enhance trainers' digital skills, increase their motivation, and provide the necessary support and resources to adapt digital tools to their specific needs and preferences.
5. Utilize digital learning measurement tools like LMS, Google Analytics, and Quizlet to track student progress and adapt teaching strategies accordingly.
6. Institutions and educators should consider implementing personalized AI-based learning resources to cater to individual adult learners' needs and improve learning efficiency.
7. Gamification tools should be incorporated into adult education programs to enhance motivation and engagement, creating a more enjoyable and effective learning experience.
8. Create channels for learners to voice concerns and report inappropriate behaviour, empowering them to take ownership of their learning environment.
9. Foster online communities and discussion groups to promote interaction and collaboration among learners, including seniors.
10. Design interactive activities and icebreakers suitable for virtual environments to foster engagement and a sense of community among learners.

For Educational Institutions and Organizations:

11. Educational institutions and organizations using online platforms should prioritize data privacy and security to protect learners' sensitive information.
12. Online platforms should ensure easy access to technical support, especially for seniors who may encounter technical difficulties.
13. Educational platforms should offer customizable content to cater to learners' individual needs and preferences.
14. Platforms should ensure that content is accessible to individuals with disabilities, including those with visual or hearing impairments.
15. Continuous improvement and updating of online courses are essential to keep content relevant and engaging.

16. When implementing VR and AR technologies for seniors, consider their specific skills and limitations and tailor the experiences accordingly.
17. Utilize digital assessment and evaluation tools to collect and analyze data, enabling data-driven decision-making to improve educational processes and outcomes.
18. Establish clear and comprehensive policies and guidelines to promote ethical behaviour and compliance with standards.
19. Invest in infrastructure and training programs to enhance accessibility and equity in digital education, ensuring that it is accessible to all.
20. Implement quality assurance mechanisms, including peer reviews and evaluations, to maintain the integrity of digital education content and instruction.

For Adult Learners and Seniors:
21. Encourage individuals to leverage the plethora of digital literacy and skills resources available to enhance their proficiency, making them more competitive in the job market and adept at using modern technology.
22. Adult learners and seniors should explore mobile learning applications that cater to their specific learning needs and preferences.
23. Individuals seeking recognition of prior learning should explore online resources and tools to navigate the process effectively.
24. Adult learners should troubleshoot technical issues, analyze learner progress data, and educate themselves about responsible online behaviour, privacy, and digital ethics.
25. Promote digital wellness and work-leisure balance to prevent burnout among educators and learners.
26. Embrace lifelong learning to stay updated on emerging digital technologies and pedagogical trends.

For Policymakers and Governments:
27. Develop age-specific initiatives for different age groups, considering variations in digital skills and usage patterns.
28. Focus on improving digital literacy, particularly among those who have never used a computer, to bridge the digital divide.
29. Promote the importance of understanding and evaluating online information, especially in countries where this criterion is less emphasized.
30. Enhance security awareness and safety when using digital tools, as this was identified as a key concern.
31. Develop digital inclusion initiatives that cater to the specific needs and priorities of each country. Tailoring programs to address the most pressing issues in each region can enhance their effectiveness.
32. Provide tailored support and training to address specific digital issues reported by respondents, such as online banking or using online learning applications.
33. Consider the variations in device and digital tool preferences across countries when designing digital inclusion programs. Adapt the tools and content to align with what is most commonly used in each region.
34. Address the challenges faced by trainers, such as the lack of knowledge or skills, through targeted training programs and resources.

35. Encourage trainers to seek help and access information or tutorials to overcome digital challenges, fostering a culture of mutual support and learning among trainers.

These recommendations aim to improve digital education, enhance digital skills, and promote inclusive and effective learning experiences for learners of all ages and backgrounds.

5.3.   Conclusions

1. Response to the COVID-19 Pandemic:
- The work package addresses the critical need to enhance digital pedagogies and instructional design in response to the COVID-19 pandemic's impact on education.

2. Benefits of Toolbox of Instruments:
- Educators and trainers will benefit from the provided toolbox of instruments, enabling them to create high-quality educational programs and ensure desired learning outcomes.

3. Competence Map for Digital Facilitators:
- The competence map for digital facilitators is an innovative approach to engaging adults and making them digitally competent citizens.

4. Role of Digital Involvement and Skills Development Toolkit:
- The Digital Involvement and Skills Development Toolkit will play a crucial role in achieving the project's objectives and improving digital education in the EU.

5. Importance of Monitoring and Evaluation:
- Ongoing monitoring and evaluation, as outlined in the project management activities, will help ensure the successful implementation of the work package's objectives and the overall project's quality.

6. Impact of Digitalization on Adult Education:
- The findings indicate that digitalization has a significant impact on adult education, offering a wide array of tools and resources.
- Online platforms and learning management systems provide flexibility and personalization but come with challenges related to data privacy and technology access.

7. Tailoring Content for Seniors:
- For seniors, simplifying interfaces, providing technical assistance, and tailoring content to their needs are crucial.
- Digital resources and materials offer diverse learning opportunities, while VR and AR tools enhance engagement and interactive learning experiences.

8. Importance of Digital Assessment Tools:
- Overall, digital assessment tools play a vital role in monitoring progress and assessing the effectiveness of educational programs.
- Embracing these technologies can lead to more efficient and effective adult education, benefiting learners of all ages.

9. Significance of Digital Literacy and Collaboration:
- The document underscores the significance of digital literacy, professional development, collaboration tools, and recognition of prior learning in the modern education landscape.
- It also highlights the potential benefits and challenges of these resources for seniors.
- Overall, these findings, recommendations, and conclusions emphasize the importance of continuous learning and adaptation to thrive in today's digital age.

10. Importance of Digital Learning Measurement Tools: Digital learning measurement tools have become indispensable in assessing and improving digital learning outcomes for students of all ages.

11. Potential of Personalized AI-Based Learning: Personalized AI-based learning resources offer a promising way to tailor education to individual adult learners, enhancing the overall learning experience.

12. Boosting Engagement with Gamification: Gamification tools can significantly boost motivation and engagement in adult education, making learning more effective and enjoyable.

13. Benefits for Seniors: Seniors can benefit from a wide range of digital tools and resources designed to improve their language skills and cognitive abilities, promoting lifelong learning and active ageing.

14. Integration of Digital Tools and Gamification: Overall, integrating digital tools and gamification into adult education, along with offering tailored resources for seniors, can lead to more effective and engaging learning experiences for all.

15. Regional Differences in Digital Skills: The study revealed varying levels of digital skills, usage patterns, and needs among learners and trainers in Poland, Spain, Türkiye, and the Netherlands. Digital skills training and support should be tailored to address the specific challenges and needs identified in each country. Bridging the digital divide, improving digital literacy, and promoting safe online practices are essential for fostering digital social inclusion.

16. Importance of Digital Inclusion Initiatives: The study highlights the importance of digital inclusion initiatives carried out by trainers across different countries. Trainers play a crucial role in serving diverse populations, including older adults, people with disabilities, migrants, refugees, and others. Addressing the digital competence and support needs of trainers can lead to more effective and inclusive digital inclusion programs.

17. Emphasis on Ethical Standards and Digital Well-being: In conclusion, the text emphasizes the importance of a comprehensive digital competence map for adult educators and the significance of professional competence, ethical standards, confidentiality, respecting boundaries, and promoting a safe and respectful learning environment in the realm of digital education. Embracing these principles contributes to a more digitally competent, responsible, and inclusive society.

18. Digital Literacy for Adult Educators: In conclusion, digital literacy is paramount for adult educators in the contemporary educational landscape. Continuous learning and adaptation are essential, given the ever-evolving digital landscape. Adult educators must not only possess digital competencies but also promote engagement, inclusivity, and responsible online behaviour among learners.

19. Key Competencies for Adult Educators: The combination of subject knowledge, andragogical expertise, interpersonal skills, and advanced digital competencies equips adult educators to provide meaningful and effective learning experiences, creating a positive impact on the diverse needs of adult learners in the digital era.

20. Proficiency Level Determination Framework: The introduction of a proficiency level determination framework for adult educators in digital matters is a significant step towards enhancing the quality and effectiveness of digital education in adult learning contexts. This framework and set of indicators can be valuable tools for institutions and organizations to assess, improve, and support the digital skills and competencies of adult educators, ultimately benefiting adult learners in the digital education landscape. To determine proficiency levels, a specific range of values has been proposed: between 1 and 1.4999 is considered Basic level,

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between 1.5 and 2.4999 is considered Intermediate level, and between 2.5 and 3 is considered Advanced level. These ranges provide clear criteria for assessing and categorizing educators' digital proficiency.

These conclusions highlight the significance of digital education, the potential of digital tools and resources, and the importance of continuous learning and adaptation in the evolving digital landscape. They also stress the need for ethical standards, digital inclusion, and the role of educators in creating meaningful learning experiences for adult learners.

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