IDEAHL

European Digital Health Literacy Strategy

Funded by
the European Union

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If you want to go fast, go alone, but
if you want to fo far, go together.

African proverb

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Foreword

The World Health Organization recognises digital health literacy as a cornerstone for achieving the highest possible standard of health for all, as noted in our Regional Digital Health Action Plan for the WHO European Region 2023-2030. In an age where digital technology permeates every aspect of our lives; accessing, understanding, and utilising digital health information is paramount. This is not just a matter of convenience; it is necessary for equitable healthcare delivery and empowerment of individuals in managing their health. It is also important to create environments, which are favourable and supportive to the health-related behaviours we want the individuals to engage in. That is why in the WHO Regional Office for Europe we also place health literacy under the broader umbrella of using behavioural and cultural insights for better health.

The data we currently have on the digital health literacy of the population shows that there is a strong call for action. According to the M-POHL European Health Literacy Population Survey 2019-2021 (HLS19), considerable parts of the adult population in European countries have limited digital health literacy, and this may be even more relevant for vulnerable populations.

The importance of a strong response to digital health literacy can be found in the findings of our recent report, which showed that 52% of member states (27 out of 52) recognise the importance of digital literacy (17 having developed digital health education action plans, policies and strategies and 10 reported that these were in development). The 60% (28 out of 47) reported they had universities or technical colleges providing students with certified education in digital health. A further 56% (25 out of 45) also reported that they had developed a digital inclusion plan (for example, a digital literacy programme for disadvantaged populations.)

This underscores the importance of DHL and the work that is currently being done, and the further work that needs to be done. The IDEAHL project, financed by the Horizon Europe Framework Programme, has been pivotal in advancing this cause. The project's mission of **Improving Digital Empowerment for Active Healthy Living** aligns seamlessly with WHO's vision of a world where everyone can realise their right to the highest possible level of health.

Let us reflect on the remarkable accomplishments of the IDEAHL project. Its ultimate purpose is the empowerment of EU citizens in using digital tools to take a more active role in the management of their own health. Through extensive mapping of existing health literacy and digital health literacy initiatives, the project analysed over 12,000 studies, culminating in identifying 450 best-practice examples. This comprehensive approach has illuminated the landscape of digital health literacy in Europe and beyond, setting the stage for informed, evidence-based interventions.

The Global Atlas of Literacies for Health (GALH) stands out as a significant innovation resulting from this project. This tool, showcasing interactive data on health literacy and digital health literacy levels, is a testament to what can be achieved through collaborative research and data visualisation. It offers policymakers, educators, and health professionals a powerful resource to inform strategies and policies.

The IDEAHL project has also introduced the first European strategy on digital Health Literacy following a collaborative effort engaging 1,434 participants, from citizens and patients to health and care and social services, policymakers, non-health sectors, and academia. This pioneering strategy, designed to be a benchmark across the European Union, features a dual core integrating digital and health information components. The digital framework encompasses training & skills development, content & curriculum, evaluation &, monitoring, and policy according to the International Telecommunication Union. Aligned with the WHO Health Literacy model, the strategy also focuses on four key pillars, emphasising access, understanding, critical appraisal, and practical application of the health information.

The project's emphasis on inclusivity, considering socio-economic, gender, and cultural dimensions, resonates deeply with WHO's commitment to leaving no one behind. By piloting targeted actions across EU countries, IDEAHL has set a precedent for how digital health literacy initiatives can be effectively implemented and evaluated.

The lessons learned and strategies developed through the IDEAHL project provide a blueprint for future endeavours in digital health literacy. As we move forward, it is crucial that we continue to emphasize the importance of digital health literacy as a key component of public health strategy.

It is not enough to merely provide digital health services; we must also ensure that they are appropriate, accessible, and convenient, that individuals have the skills and knowledge to use these services effectively, and the systems support them. This is why we must continue to build on the work of the IDEAHL's project with even more concrete actions, such as, for example, developing tools to measure digital health literacy in the population and the health workforce, in line with the EU DHL Strategy and WHO's Regional Digital Health Action Plan.

In closing, I would like to express my deepest appreciation to all those who have contributed to the success of the IDEAHL project. Much remains to be done, but your dedication and hard work have set us on a path toward a future where digital health literacy is recognised as a fundamental right, integral to the well-being of all citizens in Europe and beyond.

Ryan Alistair Dos Santos
WHO Regional Office for Europe

Strategy journey

Editors’ insight: Navigating the digital frontier

In an era of rapid technological advancement and digital transformation, the intersection of healthcare and technology has become increasingly intertwined. As we stand at the forefront of this digital revolution, the importance of digital health literacy emerges as a critical enabler, empowering individuals to navigate the complexities of the digital healthcare landscape with confidence and efficacy.

Within these pages lies the blueprint of the Digital Health Literacy Strategy, carefully crafted through the collaborative efforts of the Improving Digital Empowerment for Active Healthy Living (IDEAHL) project consortium. Comprising 14 multidisciplinary partners from 10 EU Member States (and 1 additional one from Australia), this collective embarked on a visionary quest to develop new models and approaches for digital health literacy interventions through the innovative process of co-creation.

Built on a foundation of extensive research, stakeholder engagement and co-creation activities, the IDEAHL project stands as a beacon of innovation and inclusivity in the field of digital health literacy. Guided by principles of social innovation, inclusion, gender equality, ethics and privacy, the consortium’s EU Digital Health Literacy Strategy aims to empower citizens, health professionals and policy makers alike with the knowledge and tools necessary to improve health promotion, disease prevention, treatment and self-care practices.

The Strategy’s holistic approach aims not only to bridge the digital divide in healthcare, but also to foster a culture of empowerment and engagement among people from all walks of life. With a strong emphasis on monitoring, evaluation and impact assessment, the Strategy seeks to measure its impact on the physical, mental and social well-being of citizens, as well as its wider impact on productivity and the economy.

As we embark on this transformative journey towards a more digitally empowered and health literate society, the unwavering commitment and collaborative spirit of the IDEAHL consortium shines brightly as a testament to the power of collective action and shared vision. We invite you to immerse yourself in the following pages and experience first-hand the evolution of digital health literacy in Europe –a journey marked by innovation, inclusivity and a deep sense of belonging.

Marta, Cristina, Inés, Laura and Mónica

Project genesis: Unveiling the IDEAHL consortium

The Improving Digital Empowerment for Active Healthy Living project (IDEAHL) aims at developing and testing new models and approaches of digital health literacy (dHL) intervention development and application through the co-creation of a comprehensive and inclusive EU dHL Strategy.

IDEAHL consortium overview:

The IDEAHL consortium is composed of 14 multi-disciplinary partners from 10 EU Member States, which work hand in hand with patients, citizens and the broad socio-economic sector at local level.

Lead Partner / Coordinator:

- CSPA, Regional Ministry of Health of Principality of Asturias, Spain
- SESPA, Health Service of the Principality of Asturias, Spain
- FICYT, Foundation for the Promotion in Asturias of Applied Scientific Research and Technology, Spain.

Partners:

- ADIPER, ADI & SALU SERSOC SLU, Spain
- ALL DIGITAL, Digital Skills Across Europe, Belgium
- CDC, Cáritas Diocesana de Coimbra, Portugal
- CEI, Central European Initiative, Executive Secretariat, Italy
- CE, Consulta Europa Projects and Innovation, Spain
- E-seniors: initiation des seniors au NTIC association, France
- EIWH, European Institute of Women's Health, Ireland
- ISRAA, Institute for older care and sheltered house services, Italy
- MLHSA, the Ministry of Labour, Health, Social, Family Affairs and Integration of the Free and Hanseatic City of Hamburg, Germany
- MDU, Mälardalen University, Sweden
- RMIT Europe, European hub of Royal Melbourne Institute of Technology, Spain
- SeAMK, Seinäjoki University of Applied Sciences, Finland
- UCN, University College of Northern Denmark, Denmark.

Associated Partner:

- RMIT University, Australia.

Harnessing digital technologies for health: Digital technologies are a driving force to help citizens and professionals address preventable risk factors associated with disease. They can support healthy ageing and facilitate early detection and treatment. Digital solutions that empower citizens with access to their personal health data are also central to supporting a shift in care delivery, enabling citizens to become active participants in managing their own health.

Research process and GALH integration: IDEAHL has first conducted a comprehensive mapping of health literacy (HL) and digital health literacy (dHL) research, initiatives, and projects in the EU and beyond. Notable practices and leaders, defined as best practices and champions, in these areas were identified to promote knowledge exchange and uptake of selected practices. All these champions and best practices are featured in the Global Atlas of Literacies for Health (GALH), an online visualisation tool for teaching, research, practice and policy making in health care, developed by RMIT (https://rmit.eu/galh). Building on these foundations, the IDEAHL consortium has launched an extensive co-creation process to design and plan its EU dHL Strategy.

Stakeholder engagement and co-creation: A number of 1,434 different stakeholders from 19 target population groups, including citizens and patients, health care and social services, policy makers, non-health sectors, academia, etc., actively participated in co-creation activities carried out in more than 10 countries. These engagements facilitated diverse perspectives and insights, enriching the development process of the EU dHL Strategy.

Defining health and digital health literacy: The consortium adopts the broad and inclusive definition of health literacy developed by the EU Health Literacy Consortium, which encompasses people's knowledge and skills to access, understand, appraise and apply health information to make judgments and decisions in everyday life about healthcare, disease prevention and health promotion. 'eHealth' refers to the use of information and communication technologies in health products, services and processes, combined with organisational changes in healthcare systems and new skills, to improve the health, efficiency and productivity of citizens. Finally, as defined by the EU Eurobarometer on EU citizen's digital health literacy and by the IC-Health (https://cordis.europa.eu/project/id/727474/es) project, 'digital health literacy' is the ability to search for, find, understand and appraise health information from electronic resources to make informed health decisions and solve health problems.

Methodological odyssey: Crafting the Digital Health Literacy Strategy

The development of the Digital Health Literacy Strategy started in April 2023 with the aim to provide an initial outline of the core structure of the Strategy to be presented to stakeholders during the co-creation exercises and to the (d)HL expert panel. The key pillars and dimensions of the EU IDEAHL Strategy on dHL were then identified, based on the results of IDEAHL Work Packages (WP) (see Sources of insight) and according to already well-established models for health and digital literacy from the World Health Organisation (WHO) and the International Telecommunication Union (ITU), respectively. Initially, the IDEAHL Strategy aimed to encompass 33 dimensions and for each of these, objectives, barriers and constrains, action plans, evaluation and monitoring tools would be defined. Feedback collected from local co-creation sessions and the social media campaign informed the strategy's dimensions and actions plans, which were subsequently refined through discussion with project partners, the Advisory Board and (d)HL experts.

This document has been compiled on the basis of technical information gathered by each implementing partner in relation to the policies, strategies, assigned research work or the particular country and target group related scenario of their co-creation activities, which:

- Is already available and ready to be used as it is in the pilot activities of the project.
- Is already available but needs some adaptation in terms of content, structure or both.
- Does not yet exist and will be developed to support the pilot activities of the project.
- Does not yet exist and does not need to be implemented (i.e., the pilot will be carried out using other means).
- Any other situation that currently exists.

The Digital Health Literacy Strategy has been developed by the project coordinator (CSPA-SESPA-FICYT) with the support of all partners. The dHL Strategy integrate insights collected during the co-creation process and synthesises findings from various project reports, especially the guidelines set up on ethics and inclusiveness established on WP4 (Inclusion, privacy and ethics in the (d)HL Strategy).

The indicators and procedures of a robust monitoring and impact evaluation scheme have been incorporated into the Strategy recommendations to ensure effective implementation and assess its impact on the physical, mental and social health and well-being of the citizens, as well as on productivity and the economy, also taking into account the specificities of the target groups. Finally, the Strategy took into account the lessons learned from the targeted actions selected for the IDEAHL pilot projects, which were selected, agreed and endorsed by the partners and the Advisory Board in a virtual workshop in September 2023, based on the variables and the Hanlon method. The initial development timeframe of the Strategy was five months from June to October 2023, with subsequent refinement and dissemination leading to the publication of this final version.

Sources of insight

The development of the European Digital Health Literacy Strategy drew from various sources. Based on previous work conducted within IDEAHL WPs, mainly WP1 (Map (d)HL research and practices in Europe and beyond) and WP2 (Co-creation of the EU strategy to improve (d)HL), the coordination team selected several documents for exploring, integrating new findings and co-creation results into subsequent iterations.

The documents that feed the EU Digital Health Literacy Strategy belong to two different groups: project reports and external documents.

The IDEAHL project documents consist of deliverables such as the reports on (d)HL, co-creation, and the toolkits on inclusion, ethics and privacy (versions 1, 2 and 3), as well as co-creation reports summarising 140 sessions involving citizens from 19 target groups across 10 EU Member States.

- **Deliverable D1.1.** *Report on (d)HL*: This report describes the methodology and activities conducted within WP1 of the IDEAHL project. It includes a comprehensive review of 7,148 references of studies regarding the mapping of (d)HL literature, covering policies, academic and non-academic works, and EU projects; 7,976 references regarding best practices identified, and 13,338 references of papers for the analysis of (d)HL levels across the EU.

- **Deliverable D2.2.** *Report on co-creation*: This report summarises the results of co-creation activities implemented by project partners, along with social media actions. It provides insights into the co-design methods applied, and highlights the main achievements and difficulties encountered during the process. The report foresees conclusions and recommendations for co-creation actions in the context of dHL. It also include an annex with short reports on each partner's co-creation activities implemented at local level.
- **Deliverable D4.1.** *IDEAHL inclusion, ethics & privacy toolkit V.1*: This deliverable presents the methodology and description of the first version of the toolkit. It contains the most relevant aspects to consider in the implementation of the EU dHL Strategy, covering inclusion, gender, ethics and privacy issues, data quality, patient-professional relationships, the equity of access to healthcare services, as well as other potential questions arising from the utilisation of digital technologies in the healthcare settings.
- **Deliverable D4.2.** *IDEAHL inclusion, ethics & privacy toolkit V.2*: This deliverable includes an update of the first toolkit, including fine-tuning recommendations on inclusion, gender, ethics and privacy issues. Based on the direct experience of WP2 (co-creation) and WP3 (pilot implementation), the toolkit was updated at October 2023 with more in-depth recommendations and to tackle how to include the gender and cultural adaptation of (d)HL initiatives considering ethics compliance and the socio-economic framework in each EU country by policy makers and health and care professionals.
- **Deliverable D4.3.** *IDEAHL inclusion, ethics & privacy toolkit V.3*: This deliverable presents a second update of the toolkit, offering further fine-tuning recommendations for policy makers and health and care professionals on the three main domains (gender, inclusion, ethics & privacy) in the light of the whole IDEAHL experience with stakeholders and citizens' groups.

Co-creation reports: A total of 140 sessions of co-creation sessions were conducted in 10 EU Member States engaging 1,434 citizens from 19 target groups (see list below) in 35 different contexts (considering target groups in different countries and/or regions). Their feedback was analysed to help define the barriers and needs of the end-user, informing the development of the Digital Health Literacy Strategy. The findings from all co-creation activities were integrated into the final version of the Strategy, ensuring alignment with the perspectives of stakeholders and citizens.

IDEAHL Co-creation target groups:

- Adults with low access to digital tools
- DHL and digital health experts
- Families with chronic diseases
- Formal and informal caregivers
- Healthcare and social work degrees' lecturers
- Healthcare and social work professionals
- Healthcare and social work students
- Low-income or low social index citizens
- Migrants
- Older people autonomous and in fragile conditions
- People with disabilities
- Policy makers
- Pregnant women
- Prisoners
- Schoolchildren
- Social agents
- Social workers
- Women
- Young women.

A selection of 35 policy strategy documents and 31 EU funding projects provided additional insights into best practices and emerging trends.

Partners examined these documents, alongside their co-creation reports, to identify and elaborate relevant recommendations for the EU Digital Health Literacy Strategy. A structured template facilitated information extraction and the synthesis of recommendations, resulting in the integrative summary structured around core and cross-cutting components presented here.

Enjoy the journey!

Charting the course: Steps in the IDEAHL Strategy development

State of the art: comprehensive documentation to understand the landscape and identify good practices, policies and other relevant documents.

Co-creation: involving a wide range of stakeholders in collaborative efforts.

Public endorsement: refining of ideas and perspectives through workshops and consultations with experts, as well as surveys conducted on media channels.

Contents

1

Mission, vision and values

The cornerstone of any effective project or consortium lies in its core principles and aspirations. In this key section, we outline our mission, vision and values, which serve as a guiding framework for IDEAHL's collective efforts. Together, these pillars underpin our Strategy aimed at improving digital health literacy for the benefit of all citizens, focusing on health promotion, disease prevention, treatment and (self-)care, and monitoring its impact on quality of life, well-being, productivity and the economy, taking into account the geographical, social and economic determinants of digital health literacy inequalities.

1.1. Mission

The mission is to build a digital health literacy strategy taking as main sources the exhaustive review of existing literature and projects and incorporating a co-creation process with various groups of citizens, stakeholders, civil society, health professionals and policy makers.

Its main objective is to empower people to safely and effectively use digital health tools, thus promoting informed decision making and self-care. The Strategy emphasises the potential of digital tools for active healthy lifestyles and increase people's knowledge on how technology works in health systems, and which are its benefits. The Strategy will be useful for citizens, professionals, managers and policy makers.

1.2. Vision

The IDEAHL Digital Health Literacy Strategy vision is to empower EU citizens in using digital tools to take a more active role in the management of their own health and well-being. It will support innovative person-centred care models using digital technologies safely while benefiting from disruptive health technology.

With a vision for a healthier EU, IDEAHL will strengthen the resilience and efficiency of health systems in the face of digital transformation.

It will enhance a stronger EU and government investment on dHL education, promote dHL solutions process development among stakeholders making a stronger EU.

1.3. Values

The values that transversally underpin and cover IDEAHL Digital Health Literacy Strategy are:

Accessibility

Ensuring that all people, including those with disabilities or limitations, can have equal opportunities to access and use digital health tools or technologies is paramount. This means designing applications, platforms and tools so that they can be understood and navigated by users of all abilities and characteristics. Accessibility also encompasses aspects such as the availability of services in different languages, adaptation to different devices, and the removal of economic or geographic barriers.

Collaboration

Fostering cooperation and collaborative efforts between different stakeholders –including governments, health institutions, non-governmental organisations (NGOs), the technology industry, and civil society– is essential. In IDEAHL Digital Health Literacy Strategy, collaboration enables the sharing of knowledge, resources and best practices, as well as promoting the co-creation of digital health solutions to achieve more effective and sustainable outcomes.

Equity

Ensuring that all people, regardless of ethnicity, gender, socioeconomic status or geographic location, have equal opportunities to access and benefit from digital health literacy interventions. This approach seeks to address existing inequalities, such as the digital divide, and remove barriers that may limit access to digital health information and technologies. The equitable strategy seeks to ensure that all individuals have equal opportunities to acquire digital skills and participate fully in the use of digital health-related tools and resources.

Ethics and privacy

All practices related to digital health literacy are conducted in an ethical manner and respect the privacy of users. Clear policies processing personal and sensitive health data, mandatory informed consent for all users and rigorously protection of confidentiality are included. Open, honest and responsible practices along the collection, usage and storage of information according to any regulation or law in force, are implied.

Gender

The strategy promoted by IDEAHL recognises equal opportunities in access, use and any related benefits for men, women and other gender identities. It includes recognition of gender, their individual needs, addressing barriers and gaps, promoting participation and access to decision-making positions.

Inclusion

The value of inclusion in IDEAHL Digital Health Literacy Strategy implies guaranteeing the participation and equitable access of all people, regardless of their individual particularities to the use and benefits of digital health technologies. It aims to eliminate barriers and gaps that prevent the participation of marginalised or vulnerable groups, such as people with disabilities, ethnic minorities and people living on low incomes, among others. As an inclusive strategy, advocates the adaptation of accessible and relevant digital health content and services for all, taking into account the particular needs and contexts.

Participation

End users and communities must be part of the digital health literacy strategy. It aims to ensure that people have the opportunity to express their needs and concerns, and that these are taken into account in the design, implementation and evaluation of digital health interventions. IDEAHL's participatory purpose is based on a strategy of empowering people to make informed decisions about their own health, promoting self-management and co-responsibility. It also intends to establish bi-directional communication channels to receive regular feedback from users, allowing for continuous adaptation and improvement of the Strategy.

Social environment

Recognising this means assessing and analysing the influence of the social context on the adoption and usage of digital health technologies. It aims to understand the social, cultural and community dynamics that arise from different aspects such as healthcare access to digital information and services. This value aims to establish partnerships with key stakeholders, such as community organisations, local leaders and groups of interest, to collaborate in the promotion and adoption of digital health literacy. Simultaneously, it intends to adapt the information and messages to the cultural practices and specific needs of each community that will contribute to extensive acceptance and effectiveness.

Sustainability

The value of sustainability implies ensuring that the actions and programmes implemented are preserved and endured over time. Sustainability refers to the ability to maintain and continue by limiting disruptions to digital health literacy over the long term, beyond the initial implementation phase. Efficiency approaches to resource optimisation and other strategies are considered to maximise the impact of the investment. Adequate evaluation and assessment of the implemented actions are required to ensure future sustainability.

2

Strategy conceptual framework

2.1. Core of the Strategy

The Strategy has a double core, composed of digital and health information components.

The four main components of the integrated digital framework are based on the elements of the ITU (International Telecommunication Union) Literacy Framework. This framework is a set of guidelines and recommendations to help countries and organisations develop effective digital literacy programmes. The objective of the framework is to help bridge the digital divide and improve digital inclusion worldwide. These guidelines and recommendations are proposed as a checklist or a quality toolkit to test the effectiveness of strategy and policy development. These four digital literacy main components are presented below:

Training and skills development

This component focuses on the importance of training and skills development for digital literacy. It is recommended that digital health literacy programmes provide hands-on training and focus on the development of practical, life-relevant skills.

Content and curriculum

This component focusses on the development of high-quality content and effective curricula for digital health literacy. It is recommended that content is tailored to the needs and capabilities of the target audience and delivered in an accessible and relevant format.

Evaluation and monitoring

This component focusses on the importance of the evaluation and monitoring of digital health literacy programmes. It is recommended that programmes conduct ongoing evaluation of programme effectiveness and make adjustments as needed.

Policy and strategy

This component focusses on the importance of establishing clear policies and strategies for digital health literacy. It is recommended that countries establish national digital health literacy plans and involve multiple stakeholders, including governments, civil society, the private sector and local communities.

These four digital pillars are the gateway to improve the digital health literacy competences. It is needed to have a good command of digital skills to avoid inequities and be able to take advantage of the information received to reach an adequate level of health literacy.

The inclusion of this International Telecommunication Union (ITU) Literacy Framework within a European strategy for digital health literacy holds significant importance for several key reasons:

Global standards and guidance

The ITU Literacy Framework represents a set of internationally recognised standards and guidelines in the field of digital literacy. By integrating it into a European strategy, we leverage global guidance and best practices, ensuring consistency and quality in digital health literacy efforts across Europe.

International scope

Health is a topic that transcends national borders. Incorporating the ITU framework allows the European strategy to align with international initiatives and efforts related to digital health literacy. This is particularly crucial in an increasingly interconnected world, where global collaboration is essential in addressing health challenges.

Access to resources and expertise

The ITU and its members have access to a wealth of resources, experiences and knowledge in the realm of digital literacy. By integrating the ITU framework, the European strategy can tap into these resources to develop effective programmes and projects that promote digital health literacy throughout Europe.

Consistency and effectiveness

Inclusion of the ITU framework ensures that the European strategy aligns with robust, evidence-based international standards. This contributes to the consistency and effectiveness of digital health literacy initiatives, ultimately enhancing the quality of healthcare and the health and well-being of European citizens.

Technological interoperability

The ITU addresses issues related to telecommunications infrastructure and technology. Incorporating its framework into the European strategy can help ensure technological interoperability in digital health solutions, facilitating the adoption and effective use of ICT in healthcare across Europe.

The IDEAHL Strategy also integrates the four key pillars of the Health Literacy model of the World Health Organization (WHO):

Access to the information

This pillar focuses on ensuring that people have access to reliable and relevant health information through digital platforms. It involves providing equitable access to health resources, promoting digital inclusion, and addressing barriers such as connectivity concerns or limited digital literacy skills. By increasing access to health information, people can make informed decisions about their health and well-being.

Understand the information

It refers to ensuring that people can understand and use the health information they receive. This includes skills like being able to read and understand written information, or the ability to search for and evaluate information online.

Critical appraisal of the information

This pillar focuses on developing people's capacity to critically appraise digital environments' health information. It involves analysing and discerning the quality, integrity, timeliness, and relevance of information to make informed health decisions. Some key issues related to this pillar are the reliable and transparent sources. It is very important for individuals to be able to identify trustworthy and verified sources of online health information. This includes assessing the credibility of the source, as well as seeking information backed by solid scientific evidence and issued by recognised organisations in the health field.

Application of the information

This pillar focuses on empowering people to use health-information obtained through digital environments and apply it effectively in their daily lives. The goal is to promote informed decision making and encourage healthy behaviours. Some key aspects related to this pillar are self-care, prevention and informed decision making. The use of health information should be oriented towards informed decision making. Individuals should be able to use information to evaluate different options, understand the associated risks and benefits, and make decisions that promote their well-being.

The Figure 1 shows the framework for the IDEAHL EU dHL Strategy.

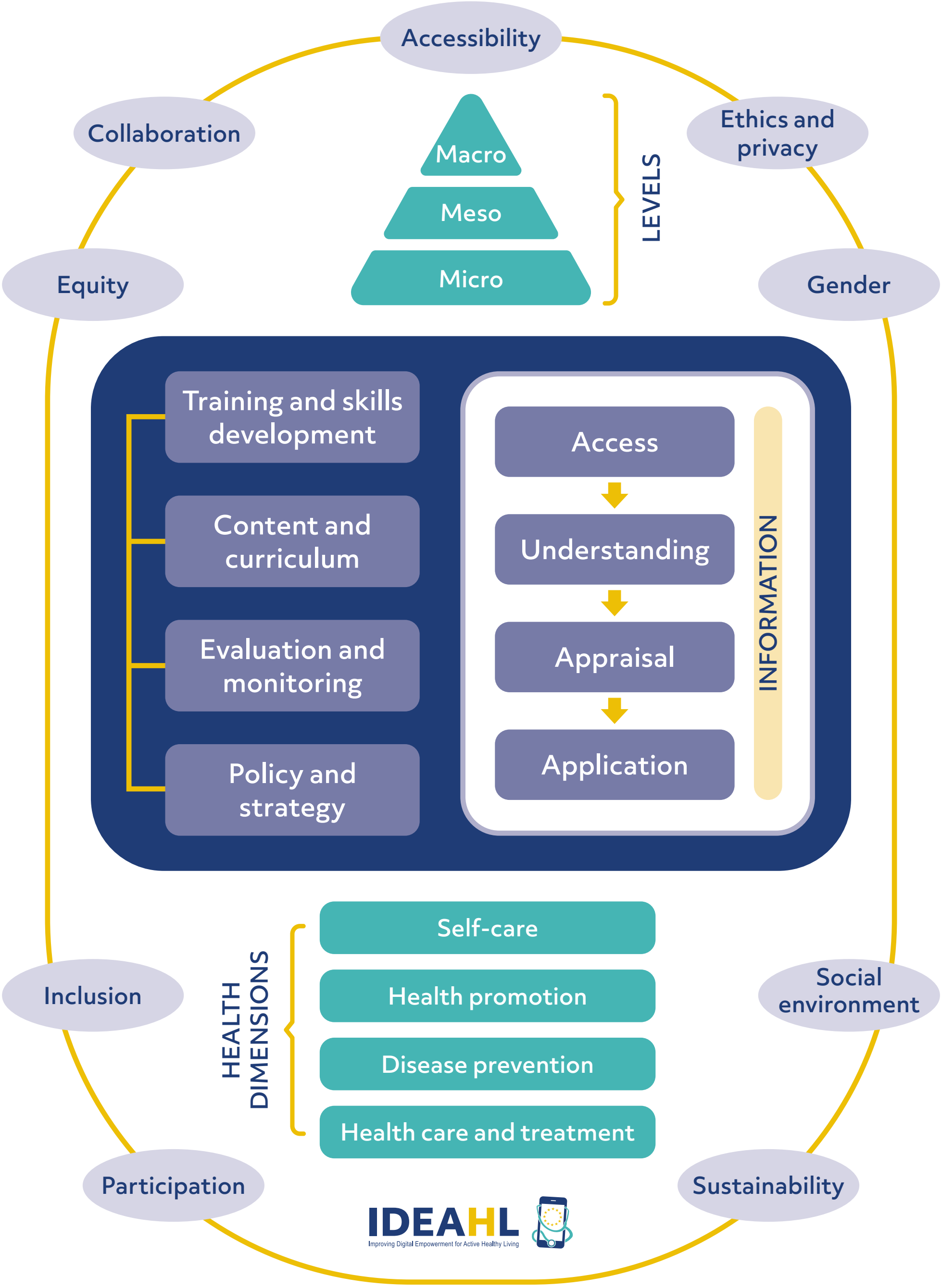


Figure 1. **Framework of the IDEAHL EU Digital Health Literacy Strategy**

2.2. Levels and health dimensions

A second layer with levels (micro, meso and macro) and health dimensions (self-care, health promotion, disease prevention, health care and treatment) interacts and modifies the core framework.

Micro level (citizen level)
Patients, citizens, families and the wider health and social workforce, including professionals, researchers, managers and other stakeholders are included in this level.

Meso level (health institution level)
It includes health and social care organisations (healthcare providers, hospitals, academia, NGOs, health industry…).

Macro level (health policy level)
Government and European and International institutions are involved in this level.

For the purpose of this Strategy, a global level has not been considered separately, as some of the policies, plans or strategies at the macro level may also operate at the global level.

2.3. Transversal cross-cutting elements

Finally, there is a set of transversal cross-cutting elements that determine and qualify all other components of the Strategy. These elements are the values that underpin the Digital Health Literacy Strategy and have already been defined in this document (see 1.3. Values).

3

Strategy guidelines

This results section is structured according to the core and cross-cutting elements of the theoretical framework of the Strategy, taking into account the micro, meso and macro levels and health dimensions.

3.1. Core of the Strategy

3.1.1. Digital literacy components

TRAINING AND SKILLS DEVELOPMENT

Micro level:

- Focuses on considering the specific needs of different target groups, such as children and adolescents, to provide tailored and prelevant content.

Meso level:

- Suggests adapting online tools to the interests and uses of each group involved, as well as establishing links between digital solutions and local services to enhance accessibility and relevance for the target population. Incorporate feedback and evaluation to improve the effectiveness of the content and curricula provided.

Macro level:

- Proposes developing specific strategies for migrants and refugees, as well as environmental and intersectoral interventions. Involves trained professionals, such as mental health practitioners or health educators, who can provide valuable expertise in developing effective content and curricula.

Summary

Feedback from contributors indicates that, in general, it is needed to emphasise the importance of investing in digital literacy programmes and working with educational institutions to integrate digital health literacy into curricula. In this way, literacy will be integrated into society as a matter of course.

These literacy programmes should aim to equip people, especially the most vulnerable such as children, older people with chronic conditions, young women, etc., with the essential skills to critically evaluate online health information and to navigate responsibly digital platforms.

There is also a need to tailor different interventions to specific populations and to use a variety of intervention methods that suit different learning styles.

Experience shows incorporating feedback and evaluations from participants is important and highly beneficial for any strategy. In addition, the involvement of trained professionals, such as health, mental health or health educators, can provide valuable expertise in the design and delivery of effective training and skills development programmes.

Overall, the importance of promoting digital health literacy through comprehensive and tailored training initiatives should be emphasised.

Recommendations & key ideas

- Use interactive and compelling methods to keep participants engaged and interested in the health material.
- Incorporate feedback and evaluation to improve the effectiveness of the content and curricula provided.
- Involve trained professionals such as non-health and mental health practitioners or health educators to provide valuable expertise in developing effective content and curricula.
- Include the topics of media literacy and information and knowledge acquisition in elementary school curricula.

CONTENT AND CURRICULUM

Micro level:

- Recommends including media literacy and information acquisition topics in primary school curricula.

Meso level:

- Participates in the implementation of micro-level programmes to turn strategies into action, which promote (digital) health literacy in basic education and encourages cooperation between homes, schools, and other educational institutions.

Macro level:

- Suggests the creation of a centralised platform scientifically endorsed by the competent authority in each country, criteria and/or a quality mark for online health resources to enable people to access reliable and comprehensive health resources, including informative articles, videos, interactive tools and forums for discussion and community support.

Summary

It is of vital importance, as shown in the previous section, to integrate digital health literacy into educational curricula. It is suggested to include topics such as media literacy and information acquisition in primary school curricula (see also training and skills development section). In addition, the need for user-friendly digital platforms that provide relevant health information, useful links, and thought-provoking information, always from the point of view of information quality and accuracy, is highlighted.

It is important to emphasise future curriculum developers will also need to have the necessary digital skills.

Overall, the need to provide concise, targeted and accessible digital health information to meet the immediate needs of people seeking health-related content is highlighted.

Recommendations & key ideas

- Develop relevant and evidence-based content and curriculum in collaboration with educational institutions and experts.
- Foster partnerships with technology companies and application developers to create user-friendly and intuitive mobile applications specifically designed for health.
- Establish clear guidelines and standards for online health information, promoting evidence-based content and ensuring that it is easily distinguishable from unreliable sources.
- Include prototypes, such as a demo massive open online course, to engage less digitally skilled individuals.

EVALUATION AND MONITORING

Micro level:

- Emphasises the importance of implementing monitoring systems to track the progress and outcomes of digital health interventions at the population level.
- Suggests conducting face-to-face co-creation activities to involve users in the design and evaluation of interventions.
- Highlights the need to assess the skills of healthcare workers to communicate effectively with patients with different levels of health literacy.

Meso level:

- Recommends implementing evaluation and monitoring mechanisms to assess the effectiveness of health interventions and information dissemination.
- Emphasises the importance of evaluating the impact and effectiveness of existing health literacy policies, strategies, and action plans to inform the development of future policies.
- Suggests conducting periodic evaluations and reviews of health literacy policies and strategies to ensure their relevance, effectiveness, and alignment with emerging research and global health literacy initiatives.

Macro level:

- Establish a comprehensive evaluation and monitoring system to assess the impact and effectiveness of health literacy interventions.
- Evaluate and monitor intersectoral cooperation and treatment pathways to ensure successful results.
- It is necessary to adopt a holistic vision of the health system and consider the interdependencies and interactions between the different components.

Summary

Continuous evaluation and monitoring of health literacy programmes is of paramount importance to assess their impact and make necessary adjustments. Emphasising the use of culturally appropriate assessment tools tailored to the specific needs of the population is crucial. Furthermore, evaluating not only the tools and their content but also the healthcare professionals' proficiency in effectively communicating with patients of diverse health literacy levels is essential.

Additionally, underscoring the requirement for experts in evaluation and monitoring is significant. Overall, there is a strong emphasis on establishing a comprehensive evaluation and monitoring system to assess the impact and effectiveness of health literacy interventions.

Recommendations & key ideas

- Continuously evaluate the impact and sustainability of interventions to refine and improve their effectiveness over time.
- Create monitoring systems that track the progress and outcomes of digital health interventions at a population level.
- Implement evaluation and monitoring mechanisms to assess the effectiveness of health initiatives and information dissemination.

POLICY AND STRATEGY

Micro level:

- Emphasises the importance of involving citizens in the co-creation, design, planning, implementation, and evaluation of digital health literacy strategies.

Meso level:

- Highlights the implementation of meso-level programmes to turn strategies into action, such as awareness and education campaigns targeting citizens and informal caregivers, like i.e., a campaign asking citizens about if they know their health data.
- Emphasises the importance of involving the healthcare system and its organisations and stakeholders in digital health literacy.

Macro level:

- Emphasises the importance of establishing a nationwide focus on digital health literacy issues.
- Mentions the importance of ensuring the relevance of health literacy in politics and the healthcare system.
- Highlights the key role of municipalities in health promotion and health literacy.

Summary

It is important to develop robust policies and strategies to address digital health literacy. A policy framework needs to be established that prioritises digital health literacy on the public health agenda. It is crucial to involve multiple stakeholders, such as governments, health care organisations, educational institutions, and civil society, in policy formulation and implementation.

Comprehensive strategies are needed that address specific challenges related to digital literacy in health, such as the digital divide and inequality in access to technology, not only in the digital environment but also to the hardware itself. It is essential to promote collaboration and cooperation between the different actors involved in digital health literacy.

It is recommended that an atlas of digital health literacy, such as the GALH produced by RMIT as part of the IDEAHL project, be developed and used to capture best practice in this area and to ensure accurate information on digital health literacy across regions and countries. It is important to improve it through regular updates, comprehensive expansion, and systematic data collection with collaboration from international health organisations, governments, and research institutions. The updates of the atlas will provide the most current and accurate information; the expansion will include comprehensive information on health literacy initiatives, best practices, and interventions from countries around the globe; and the establishment of a systematic process for data collection, verification, and updating, to keep the content up to date. Strive for comprehensive coverage of countries worldwide. Collaborate with international health organisations, governments, and research institutions to gather and include data from a wider range of countries.

The need for sustainable funding mechanisms to support the implementation of digital literacy policies and strategies in health must also be considered. The allocation of adequate resources and the guarantee of accountability in the implementation of these policies and strategies should be highlighted.

Recommendations & key ideas

- Develop policies and strategies that promote digital health literacy and ensure equitable access to digital health tools and technologies.
- Foster collaboration between stakeholders, including policy makers, healthcare providers, and technology companies, to promote digital health literacy.
- Ensure the promotion of an updated digital health literacy atlas (GALH) to identify and implement best practices.

3.1.2. Health literacy components

ACCESS TO THE INFORMATION

Micro level:

- Emphasises the need to adapt online tools and digital solutions to the specific interests and uses of different target groups, ensuring accessibility and relevance.
- Ensures the establishing of linkages between digital solutions and local services to enhance accessibility and relevance for citizens.
- Tailor health information to the specific needs of different populations, such as children, adolescents, and other participants.

Meso level:

- Highlights the use of user-friendly language, visual aids, and audio formats to accommodate diverse audiences.
- Highlights the importance of developing strategies to improve access to health information for migrants and refugees.
- Emphasises the implementation of environmental and intersectoral interventions to enhance access to health information.
- Encourages the use of community-based approaches to ensure that health information reaches underserved populations.

Macro level:

- Promotes the development of basic digital skills, such as searching, evaluating, and effectively using online information.
- Emphasises the importance of reliable and high-speed digital infrastructure to ensure equal access to health information.
- Encourages the use and creation of open educational resources and promotes a culture of lifelong learning.

Summary

It is necessary to take into account the specific information needs of various social groups, such as children, adolescents and others, in order to provide relevant and personalised content.

For this, it is necessary to adapt not only the content but also the digital tools that are available to them and the links that local services can offer to provide them with greater accessibility.

Strategies should include not only the local population but also consider migrants, refugees or vulnerable people and address the information offered in health from a transversal (intersectoral) point of view.

Finally, the need to promote basic digital skills that allow the user to efficiently search, evaluate and use the information consulted cannot be neglected.

The information must be accessible, truthful and with an infrastructure capable of offering high speed, open and accessible resources.

Recommendations & key ideas

- Ensure that digital health tools and technologies are accessible to all individuals, regardless of their socio-economic status or other demographic factors.
- Develop user-friendly and intuitive mobile applications specifically designed for women's health, providing personalised health tracking, educational resources, and access to support networks.
- Establish clear guidelines and standards for online health information, promoting evidence-based content and ensuring that it is easily distinguishable from unreliable sources.

UNDERSTANDING THE INFORMATION

Micro level:

- It is important to provide clear, truthful and concise health information to improve people's understanding.
- The language should be simple and use visual aids to improve the understanding of the health information.
- It is important to develop interventions that address barriers to health literacy at the individual level.

Meso level:

- It is important to train health professionals to effectively communicate health information to patients.
- Health literacy assessment tools should be developed to identify areas for improvement and tailor interventions accordingly.
- Encourage the development of patient-centred communication strategies to improve understanding.

Macro level:

- Promote the integration of health literacy in educational curricula to improve understanding of information from an early age.
- Assess the importance of promoting media literacy (TV, Radio, social media, etc.) to help people to critically evaluate health information.
- Emphasise the need for policies and initiatives that ensure the accuracy and reliability of health information.

Summary

The understanding of the information should be promoted among the general population and patients. Health literacy interventions should also be aimed at ensuring that people can understand and use the health information they receive from digital media appropriately.

For this, health information must always be clear and concise, use simple language and use visual aids to improve understanding.

Health professionals must have sufficient competencies to effectively communicate health information to patients, ensuring that they can understand and use the information provided.

It will also be interesting to use HL assessment tools to identify areas for improvement and adapt interventions accordingly.

Once again, the importance of including good digital literacy skills in the school curriculum is highlighted, as well as the importance of guaranteeing that the information offered is accurate and reliable.

Recommendations & key ideas

- Digital health literacy is essential for individuals to navigate digital platforms and critically evaluate health information online.
- Policies and strategies should be developed to promote digital health literacy at a systemic level and address skills gaps.
- Critical appraisal skills should be developed among individuals to help them evaluate the quality and reliability of health information.

CRITICAL APPRAISAL OF THE INFORMATION

Micro level:

- It is needed to emphasise the importance of the population verifying the accuracy of health information before making decisions about their own health.
- It is necessary to improve the usability of digital platforms and tools to increase user satisfaction and consequently facilitate the critical assessment of health information.
- Promote the development of free and simple access guidelines and resources to support people in their critical evaluation of health information.

Meso level:

- It is important to have tools to assess the ability of patients to understand and use the health information provided by health workers.
- There must be ways to assess and monitor patient satisfaction with health care and the health information provided.
- The implementation of interventions should be encouraged to continuously assess the impact and sustainability of said tools or interventions, refining and improving their effectiveness over time.

Macro level:

- Education and awareness of media literacy should be promoted to enable people to critically evaluate health information.
- The role of lifelong learning in the development of critical thinking and information evaluation skills is essential for achieving this objective.
- It is important to highlight the impact of general education and information technology skills on people's ability to obtain, receive and evaluate health information.

Summary

It is imperative that individuals to have adequate capacity and tools to discern between accurate and false health information, enabling them to make informed decisions regarding their own well-being. Similarly, it is crucial to establish systems for evaluating patients' comprehension and utilisation of information provided by healthcare professionals, ensuring its accessibility and understanding.

Measuring the issuance, reception, and utilisation of information by patients is essential for assessing its impact and sustainability, facilitating a process of continuous improvement that identifies and rectifies any errors.

At the macro level, the promotion of media literacy and consciousness-raising is pivotal in enabling individuals to critically evaluate health information. Lifelong learning plays a significant role in cultivating critical thinking and information evaluation skills. Additionally, the influence of general education and information technology proficiency on individuals' capacity to access, receive, and evaluate health information must be acknowledged.

Overall, the objective is to empower individuals by ensuring the accuracy of health information, enhancing the usability of digital platforms, providing guidelines for critical appraisal, evaluating patient understanding and satisfaction, promoting media literacy and lifelong learning, and recognising the importance of general education and information technology skills. This comprehensive approach enables individuals to make informed decisions about their health through a diligent evaluation of information.

Recommendations & key ideas

- Develop critical appraisal skills among individuals to help them evaluate the quality and reliability of health information.
- Foster partnerships with technology companies and app developers to create user-friendly and intuitive mobile applications specifically designed for women's health, providing personalised health tracking, educational resources, and access to support networks.
- Establish clear guidelines and standards for online health information, promoting evidence-based content and ensuring that it is easily distinguishable from unreliable sources.

APPLICATION OF THE INFORMATION

Micro level:

- It is important to consider the need to simplify the interface between humans and technology to facilitate the application of health information.
- People should be encouraged to take an active role in their health care by asking questions and seeking clarification from health professionals.
- It will prioritise empowering people to make informed decisions about their health based on the information they receive.

Meso level:

- Importance of collaboration between health professionals and patients in the application of health information.
- It must recognise the need for effective communication and genuine shared decision-making between healthcare professionals and patients.
- Promote the development of interventions that support people in the application of health information in their daily lives.

Macro level:

- Highlight the role of policy makers in creating an enabling environment for the application of health information.
- Emphasise the importance of policies that promote patient-centred care and support people in the application of health information.
- Highlight the need for policies that address health inequalities and ensure equitable access to health services.

Summary

Ensuring the provision of essential capabilities and resources to discern truthful and fallacious health information among citizens is of paramount importance for them to apply health information. Similarly, the establishment of comprehensive systems for evaluating patients' comprehension and utilisation of health-related insights, acquired from proficient medical practitioners, warrants meticulous attention to ensure their unfettered accessibility and accurate assimilation. Concomitantly, the imperative assessment of information dissemination and application by patients assumes pivotal importance, serving as an indispensable yardstick for making continuous enhancements. Central to our approach is the cultivation of enduring erudition and the recognition of the far-reaching ramifications of general education and information technology proficiency in facilitating the acquisition, reception, and scrutiny of health-related knowledge. Our overarching aspiration is to empower individuals by furnishing them with unequivocal, lucid, authentic, and easily accessible health information. This will be achieved through optimising the usability of digital platforms, proffering comprehensive guidelines for meticulous evaluation, undertaking rigorous evaluations of patients' comprehension and contentment, advocating for media literacy and perpetual learning, and acknowledging the quintessence of general education and information technology expertise. By embracing this all-encompassing strategy, individuals will be empowered to make judicious decisions regarding their health, fortified by a discerning appraisal of pertinent information.

Recommendations & key ideas

- Encourage individuals to apply the knowledge and skills gained through digital health literacy programmes to make competent decisions about their health and well-being.
- Foster partnerships with technology companies and app developers to create user-friendly and intuitive mobile applications specifically designed for health, providing personalised health tracking, educational resources, and access to support networks.
- Develop policies and strategies that promote the use of digital health tools and technologies to improve health outcomes and reduce healthcare costs.

3.2. Transversal cross-cutting elements

3.2.1. Accessibility

Accessibility places great importance on improving access to health interventions and information for diverse audiences. It is crucial that these interventions are available in various formats and platforms to meet different preferences and needs. This includes the use of user-friendly language, visual aids and audio formats to accommodate the diverse range of people we serve.

In addition, there must be recognition of the continuing importance of readability issues in the search for health content on the Internet. It is imperative that usability and accessibility issues are addressed during the co-creation process, and that health institutions, facilities, websites and digital platforms are designed with accessibility in mind.

In addition, it is essential to promote the adoption of accessibility standards and guidelines in healthcare institutions. This commitment ensures that our facilities, websites and digital platforms are accessible to people with disabilities, ultimately promoting inclusion and equal access to crucial health information and services.

In the context of a European-level health and digital literacy strategy, the following recommendations and considerations are crucial for creating accessible content and services:

- Diverse formats: ensure that health-related information and services are available in a variety of formats to accommodate different preferences and needs.
- Readability: prioritise readability by using user-friendly language, clear fonts, and uncluttered graphical interfaces.
- User-centric approach: simplify procedures for accessing online services and avoid constant changes, promoting user-friendliness and reducing complexity.
- Uniformity and coherence: maintain consistency in service access to prevent the proliferation of platforms and diverse procedures.
- Reducing bureaucracy: minimise unnecessary bureaucracy in both digital and traditional services to enhance efficiency.

By adhering to these recommendations, a European-level health and digital literacy strategy can ensure that content and services are accessible to the entire population, regardless of their abilities or disabilities, promoting inclusivity and usability.

Overall, it underlines the great importance of improving accessibility by providing interventions in multiple formats, addressing readability issues, considering usability and accessibility in the co-creation process, and promoting the adoption of accessibility standards in healthcare institutions.

3.2.2. Collaboration

One of the cornerstones of this section is that collaboration should foster environments for networked collaboration and a multi-agency approach to development and co-design. Focus should be placed on the need to collaborate across different organisations and stakeholders to ensure quality outcomes.

Organisational elements that support the implementation of digital health literacy should be enhanced. This involves embedding mechanisms for visibility, orientation and attraction within structures, as well as demonstrating leadership commitment to advance in digital health literacy within the organisation.

In addition, novel methods of data collection should be explored to reduce burden, improve accuracy and completeness of data collected. It should also encourage greater involvement of the target population groups of digital strategies, and take into consideration their ideas, needs and difficulties in accessing and understanding health tools and information.

Similarly, the participation of experts in the relevant fields throughout the process, from the design of the study to the analysis, interpretation and communication or publication of the results, is essential to provide greater quality. This ensures a comprehensive and multidisciplinary approach to addressing health-related issues.

In summary, the overarching principles include fostering collaboration between organisations and stakeholders, improving organisational support for digital health literacy, exploring innovative methods of data collection, involving target populations, and engaging experts in various relevant fields. These principles collectively contribute to the success of digital health literacy initiatives.

3.2.3. Equity

The focus must be on promoting equitable access to health interventions and services for all people, regardless of socioeconomic background or population group. The challenges posed by the use of digital technologies, such as electronic consent, can reduce equitable access to clinical trials among different socioeconomic groups, as well as other types of barriers associated with technology (digital divide).

It is vitally important to work on overcoming cultural and linguistic barriers to ensure equitable participation with digital tools. This suggests applying culturally sensitive strategies at all stages of the development of tools and interventions.

It is also necessary to avoid making assumptions based on age and to recognise that young people may be proficient in digital technologies but less able to critically evaluate information. It is important not to rely solely on age as an indicator of digital competencies and information evaluation skills.

To achieve this, policy makers should consider several aspects, including providing user-friendly and easily understandable guidance for citizens to navigate healthcare systems, consulting with stakeholders from various sectors to test the effectiveness of health literacy strategies, and ensuring accessibility and equity in access to health services and information.

In general, consideration must be given to addressing barriers to equitable access, overcoming cultural and linguistic barriers in the creation of strategies and tools, and recognising the need for digital literacy and critical information evaluation skills in different age groups.

3.2.4. Ethics and privacy

Confidentiality is paramount across all cohorts, underscoring the critical need to safeguard individuals' privacy and protect the confidentiality of their health information. In addition to safeguarding confidentiality, addressing ethical and privacy concerns in health data collection is crucial.

It is also essential to adapt laws and regulations related to the management of patient data through internal meetings with legal professionals. Advocacy for legislation that promotes data privacy and enables interoperability of electronic devices and access to data systems is essential.

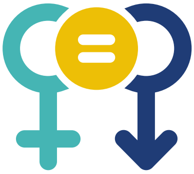
The use of unique identifier numbers and anonymisation techniques to identify participants is strongly recommended. These measures enhance privacy and confidentiality in research studies and in the development of digital literacy guides, resources and tools.

Other interesting recommendations to ensure proper ethics and privacy within the strategies adopted would include:

- Incorporate the basic principles of bioethics, such as beneficence, non-maleficence, justice and autonomy.
- Prioritising informed consent and patient autonomy in health care decision-making.
- Make the digital world more accessible and inclusive for vulnerable populations, such as low-income citizens, older people, people with disabilities, and the hearing and visually impaired, so that they can access information and make their own decisions autonomously.
- Provide clear privacy and data security guidelines to protect patients' personal and confidential information.
- Promote communication and collaboration with health professionals to ensure that everyone has equal access to health information and services.
- Respect the rights, equality and dignity of individuals by protecting their privacy and confidentiality.

Implementing these recommendations in health ethics and privacy policies ensures equitable access to quality health services and information for vulnerable populations.

3.2.5. Gender



The importance of considering gender in the dHL Strategy cannot be overstated. Although similar literacy strategies have shown that gender differences in adult literacy are minimal, given the age diversity of the target populations, it is recommended that gender be taken into account when developing health policies and interventions, promoting gender equity and addressing health challenges.

Stakeholders are encouraged to work together to improve access to health information and services, especially for marginalised groups. Health professionals and public health organisations should lead initiatives to improve the health literacy of young women. This includes implementing targeted health education programmes that address women's specific health needs, including areas such as reproductive health, mental health and chronic disease management. These programmes should be culturally sensitive and tailored to the needs of different communities.

A comprehensive approach should take into account the full range of gender differences, emphasising the critical need to identify and address potential gender disparities in health literacy, particularly in terms of their profound impact on health outcomes.

There is a need for inclusive design in dHL and eHealth strategies, together with the provision of training for health professionals on sex and gender issues, and advocacy for the use of digital tools to eliminate instances of gender-based violence, in order to improve health outcomes for all people and promote a fairer and more just and equitable societies.

3.2.6. Inclusion

Inclusive strategies are paramount in promoting digital health literacy. It is imperative to foster accessibility within the health literacy strategies. It is also important to ensure that interventions and information are readily accessible to diverse populations, encompassing individuals with disabilities, varying cultural backgrounds, and differing levels of health literacy.

To promote health literacy, policy makers must prioritise investment in good education and ensure that everyone is able to read, write and critically evaluate information. Resources should be allocated to ensure good health literacy and digital health education from primary school through to university, with special attention to different population groups.

To involve vulnerable groups in health-related decision-making, policy makers should consult stakeholders from various sectors to test the comprehensibility and effectiveness of health strategies. Ethical and social implications, including gender and inclusion factors, should be integrated. Special efforts should be made to provide access to groups most vulnerable to exclusion, such as older people, migrants, or refugees.

Healthcare providers and policymakers should also make digital health solutions accessible to all citizens, regardless of their physical, sensory, cognitive, or linguistic abilities. This means developing user-friendly, standardised solutions and simplifying access to health data. Health professionals should improve their understanding and ability to uncover citizens' and patients' digital health skills.

Recommendations for improving (digital) health literacy include simplifying materials, using media-based methods, and maximising the use of visuals. Written materials should be simplified to a 5th grade reading level and supplemented by images, appropriate font size and spacing. Media-based communication, such as video formats with simplified language, should be use to improve comprehension. Visual aids, including concrete and realistic images and pictograms with clear captions, should be used effectively.

Develop digital health literacy workshops and mobile applications in collaboration with healthcare professionals and public health organisations to ensure that the information provided is accurate, trustworthy, and respectful of individuals' privacy. Governments or the European Commission should be responsible for funding these workshops and applications to ensure their sustainability. Tailor interventions to specific groups to ensure that they are effective and engaging. Consider contextual factors and adapt the strategy to local contexts. Consult with stakeholders from different sectors to test the understandability and effectiveness of the strategy.

Integrating scientific data into legal texts can highlight benefits, simplify administrative procedures, and better market digital health literacy policies. Promoting digital health literacy among healthcare professionals and updating university curricula to incorporate digital health literacy are essential steps. In addition, involving vulnerable groups in the development of programmes within their communities can increase acceptance and effectiveness.

Additionally, promoting cultural and religious acceptability involves forming diverse research teams, considering cultural and religious factors in programme implementation, and promoting inclusiveness and respect. Encourage the composition of cross-cultural research teams to facilitate understanding of cultural and religious diversity. Consider cultural and religious acceptability when recruiting and implementing health literacy programmes. Promote inclusivity and respect for cultural and religious differences to ensure the effectiveness and acceptability of (digital) health literacy initiatives.

Overall, promoting health inclusion for low digital skills citizens and low-income individuals requires a comprehensive approach that addresses education, accessibility, inclusion and participation. These recommendations aim to improve the effectiveness and uptake of digital health literacy initiatives worldwide.

3.2.7. Participation

With regard to participation, the efforts must be centred on promoting active involvement and commitment of individuals within the health literacy strategy. The significance of engaging special groups, professionals, and stakeholders in the planning, development, and implementation of digital health and social services should be emphasised.

Ensuring universal access to digital health and social services is imperative, taking into consideration the need to address barriers such as digital identification. Additionally, it is crucial to recognise the importance of providing education to professionals regarding minority groups to foster inclusion.

Moreover, it is of utmost importance to acknowledge the significance of targeting stakeholders in a manner that facilitates the participation of those who may be more challenging to reach, including minority groups or individuals with lower health literacy levels. Furthermore, addressing individual factors, such as cognitive, motivational, and emotional aspects, in the development of health literacy and the implementation of personalised strategies and interventions is essential.

Participation in digital health literacy strategies necessitates tailoring the tools in a specific manner for the intended users.

Firstly, it is important to involve target groups in the design and implementation of interventions and to ask them how they want to receive information.

Secondly, parents play a crucial role in influencing their children's health through their own digital health literacy, and employers, social insurance agencies, and others should be active actors in interventions to promote children's health.

Thirdly, occupational health care should be considered as a relevant actor in enhancing digital health literacy, particularly for individuals with a high risk of digital exclusion, such as persons with intellectual disability.

Fourthly, the importance of not ignoring specific differences within groups of the population and ensuring that digital solutions are not universal and will not reach everyone if the necessary support and adaptations are missing. It is important to highlight the need to address challenges such as technical barriers and the understanding of health language. To facilitate participation in health, it is recommended providing resources and time within the working day for health professionals, promoting inclusion and accessibility, and avoiding expensive and discriminatory special solutions. Additionally, it is highlighted the importance of not ignoring specific differences within groups of the population and ensuring that digital solutions are not universal and will not reach everyone if the necessary support and adaptations are missing. Overall, it is recommended a collaborative approach involving various stakeholders, including parents, employers, social insurance agencies, and occupational health care providers, to promote digital health literacy and participation in health initiatives. It is also emphasised the importance of end reports and general conclusions to acknowledge participation, boost self-esteem, and learn about the impact of participation.

3.2.8. Social environment

Within the realm of the social environment, there is a need to emphasise the importance of considering the social context and environment when formulating a health literacy strategy. It is crucial to assess thoroughly the need to establish supportive environments that facilitate health literacy and promote positive health behaviours.

Underscore the significance of intersectoral collaboration in health literacy policies and recognise the benefits of promoting health literacy extend beyond healthcare settings. There is a need to foster multidisciplinary information exchange, share digital knowledge with other sectors, and promote mutual respect among diverse professional groups. Any strategy related to digital health literacy must embrace a multidisciplinary and comprehensive approach.

Furthermore, highlight the importance of upholding public trust by involving data subjects in health literacy initiatives and by being trustworthy. It also underscores the need to enhance trust between public and private organisations to foster collaboration between the two.

There is also need to emphasise the value of maintaining public trust by involving data subjects in health literacy initiatives and by being trustworthy. It is also essential to build trust between public and private organisations to encourage collaboration between the two.

Finally, consider the importance of collaboration and equal access to literacy at all ages, including the promotion of literacy among migrants and people from migrant backgrounds by working together at the national, regional, and local levels. It is imperative to invest in digital and health literacy, especially for those who are no longer engaged in formal education or the labour market. The social context can significantly influence the availability, accessibility, and comprehension of health information among individuals, which is why this should be taken into account when developing strategies for specific groups.

Additionally, disparities in access and comprehension of information based on language, disability, and multiculturalism need to be addressed. Recommendations include creating local learning opportunities and innovative experiences in digital health literacy, disseminating information in a clear and simplified manner, and nurturing social institutions. A holistic, community-centred approach to digital health literacy should also be adopted, recognising the complex interaction of social, cultural, economic, and community factors. Policy makers should pay particular attention to different population groups when making decisions, including individuals with mental health issues, intellectual disabilities, older adults, and immigrants.

3.2.9. Sustainability

Sustainability is a fundamental pillar for a health literacy strategy, so specific actions are essential.

Firstly, it is crucial to establish new spaces and engage in dedicated research and development activities aimed at enhancing infrastructure and related projects.

In addition, it is crucial to reinvest the cost savings achieved through the implementation of digital and literacy tools. Reinvestment can take various forms, such as promoting self-care, increasing health knowledge among citizens, and optimising the use of healthcare resources through improved information dissemination and training, is essential. This reinvestment is essential to ensure the continued improvement and sustainability of the healthcare system.

Supporting the digital and green transitions must also be a priority. This means maximising the potential of data-driven research and innovation within digitised health systems while fostering a competitive and secure data economy. In particular, we should actively encourage the establishment of the European Health Data Space (EHDS) and leverage European electronic health records to facilitate these transitions. According to the EC description, the EHDS is a health specific ecosystem comprised of rules, common standards and practices, infrastructures and a governance framework that is intended to regulate and promote the exchange of health data within the EU, both for primary and secondary use of data.

It is of utmost importance to underscore that the digital transformation should deliver benefits to both the population and the healthcare system. Its role should extend beyond serving as a mere cost-saving tool within organisations.

There are certain recommendations that should be followed to promote sustainable health practices through health literacy and digital health literacy initiatives. It is highly recommended to actively involve target groups and seek their input on how they prefer to receive information. This approach ensures the long-term sustainability of health interventions by addressing the specific needs of the target population.

Furthermore, policy makers should prioritise nationwide solutions to improve the accessibility of health-related information rather than creating new platforms and information channels for citizens. Comprehensive fact sheets or platforms summarising all relevant services for each target group should be made available in both digital and paper formats to enhance accessibility.

Additionally, it is essential to avoid costly and discriminatory special digital solutions that can be easily replaced by simpler alternatives. This emphasises the call for cost-effective and sustainable solutions in health interventions. First, there should be a focus on the promotion of digital health literacy and equity, particularly in relation to women's health. While specific recommendations for promoting sustainability in health interventions are not outlined, it is imperative to give greater attention to health ethics and privacy during the development and implementation of digital health technologies.

Finally, colleges and universities should digitalise their health services to enhance accessibility, considering the high level of digital literacy among young people. This approach has the potential to lead to more sustainable health interventions in the long term, as digital health services tend to be more cost-effective and efficient.

3.3. Implementation, monitoring and evaluation

Effective implementation of any intervention requires careful planning. Start by setting clear goals, then break down your strategy into actionable steps and establish a timeline for implementation. Allocate the necessary resources and communicate the strategy to relevant stakeholders. Anticipate potential risks and challenges and develop strategies to mitigate them. Monitor and evaluate progress using metrics and feedback mechanisms, and adjust the strategy based on lessons learned to ensure continuous improvement.

In the context of digital health literacy, monitoring and evaluation (M&E) play a crucial role in assessing the effectiveness and impact of the strategy. The M&E process is a crucial component that serves as a prerequisite for assessing whether the actions taken are effectively accomplishing the intended goals. M&E helps in keeping tabs on progress and ensuring that activities are proceeding as planned to achieve their objectives.

To achieve this goal, the IDEAHL Strategy recommends that stakeholders involved in implementing health literacy activities actively monitor the level of digital health literacy maturity in nations, regions, and institutions.

Monitoring is the process of observing and tracking activities and progress. It is a critical component of any successful project, intervention, public policy, or programme. Monitoring is an ongoing, continuous process. It requires the collection of data at multiple points throughout the programme or project cycle, including at the beginning to established a baseline.

As defined by the Organisation for Economic Co-operation and Development, OECD (**https://www.oecd.org/dac/dac-glossary.htm**), evaluation is “the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation, and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact, and sustainability”.

A strategy must be evaluated and monitored, but it is also advisable to carry out these actions with the interventions that are part of it: project, programme, policy, actions, thematic area, or other activity. In this sense, the document will use any of these terms interchangeably, taking this principle into consideration and assessing the need to evaluate the different levels that make up the strategy itself.

3.3.1. Theory of change

Interventions, actions, projects, programmes or policies at local, regional, or national level must be in line with the EU dHL Strategy. In this sense, each intervention should assess the methodology best suited to the needs and particularities of each setting. However, in order to follow a systematic methodology to organise the evaluation of interventions, it is proposed to use the Theory of Change (ToC).

A theory of change can support an impact evaluation in several ways. It can identify:

- Specific evaluation questions, particularly in relation to those elements of the ToC for which there is no substantive evidence yet.
- Relevant variables that should be included in data collection.
- Intermediate outcomes that can be used as markers of success in situations where the impacts of interest will not occur during the evaluation timeframe.
- Aspects of implementation that should be examined.
- Potentially relevant contextual factors that should be addressed in data collection and analysis, to look for patterns.

It can be developed for any level of intervention: an event, a project, a programme, a policy, a strategy, or an organisation (micro, meso and macro levels). Furthermore, it is particularly useful when the intention is to learn from an impact evaluation conducted at one place and then apply those lessons at another place. A ToC can be developed for an intervention where objectives and activities can be identified and rigorously planned in advance, or it can be adapted based on emerging problems that need to be addressed. For this reason, it should be kept to under review throughout the evaluation in case the intervention itself or the understanding of how it works (or how it is intended to work) changes.

The ToC aims to explain how a project or intervention is understood to work. It facilitates the identification of specific evaluation questions, relevant variables for inclusion in data collection, and intermediate outcomes serving as markers of success in situations where the desired impacts may not occur during the evaluation timeframe. Additionally, the ToC guides the examination of implementation issues and potentially relevant contextual factors that should be addressed both in data collection and analysis.

The ToC must begin with a thorough analysis of current circumstances. This involves identifying several key elements: firstly, pinpointing the problem that the intervention seeks to address; secondly, understanding the root causes and potential consequences of that problem; and finally, recognising opportunities, including possible collaborations with other initiatives and the use or enhancement of existing resources. Even in cases where the ToC is being developed or significantly revised well into the implementation phase, it is still crucial to re-examine the conditions that motivated the intervention to confirm that the right problem is indeed being addressed. The next critical step is then to define the specific facets of the problem to be addressed by the intervention and to clearly articulate the expected outcomes and impacts.

Data collection for evaluation must be carried out at all levels using the necessary indicators to carry out a comprehensive evaluation covering all aspects and relevant actors in it. It is important to bear in mind that the different levels of data collection are complementary and feed each other, since to evaluate, for example, the possible effects of the implementation of a specific action (outputs, outcomes, impact), we will need to have data on the inputs and activities carried out.

The ToC can be developed at the beginning of a project or intervention to assist in strategic planning, or it can be used to analyse an ongoing initiative (so that it can be evaluated). While it is particularly valuable for complex initiatives, it can also enhance the planning and evaluation of simpler projects.

There are different ways of presenting a ToC. An output chain (or pipeline model) represents the ToC in terms of a series of boxes, as shown below. However, it can also be represented in narrative form.

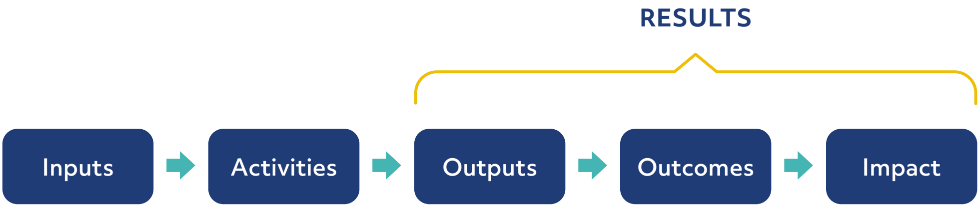


Figure 2. Theory of change presented in results chain

3.3.2. Indicators

An important part of M&E is the use of indicators. Indicators in M&E are fundamental measures that help to track and assess the progress and performance of an intervention. To be effective they should be specific, measurable, achievable, relevant and time-bound (SMART) features that provide information on the inputs, activities, outputs, outcomes, and impacts of the intervention.

There are different types of indicators that are drawn from the different phases of the ToC; Figure 3 illustrates some of them.

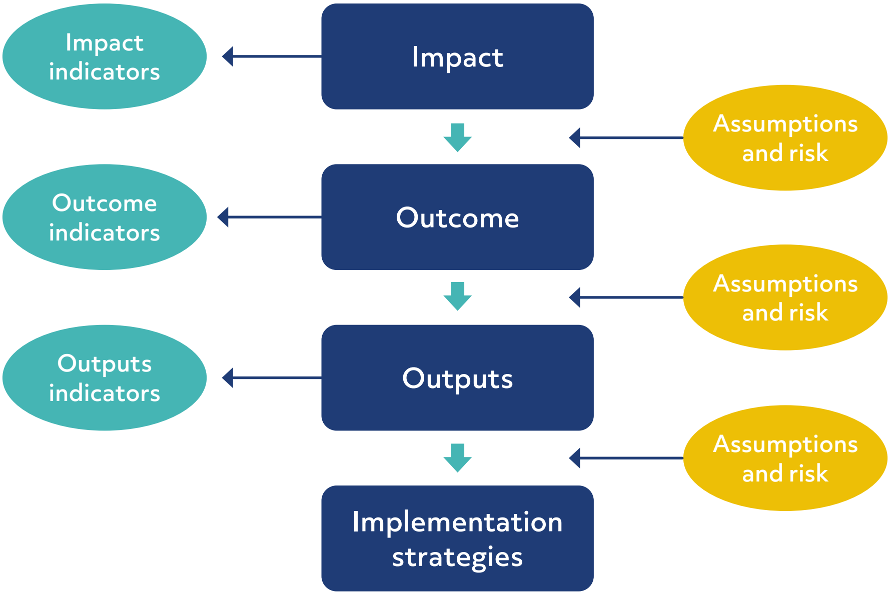


Figure 3. Schematic depiction of ToC

These indicators should include both the status and performance of dHL interventions and include M&E models to facilitate tracking the contribution of dHL to macro, meso and micro levels. Indicators can be classified into:

Indicator	Definition
Efficiency	Measures cost-effectiveness of the strategy, such as the ratio of resources invested to results achieved.
Effectiveness	Extent to which the strategy is achieving its objectives, such as the proportion of the target population reached.
Impact	Positive and negative, primary and secondary long-term effects produced by an intervention, directly or indirectly, intended or unintended, on a population or environment.
Input	Resources invested in the pilot activity. The financial, human and material resources used in a programme or policy. For example, training materials produced.
Outcome	The likely or achieved short-term and medium-term effects of a programme or policy´s outputs. It measures the changes or impacts that result from the intervention.
Output	The immediate effects of programme and/or policy activities or the direct results, products or deliverables of programme and/or policy activities.
Process	Measures the intervention’s activities and outputs (direct products or deliverables of the activities). Together, measures of activities and outputs indicate whether the intervention is being implemented as planned.
Quality	Quality of strategy action delivery, such as the satisfaction levels of participants.
Sustainability	The potential for the strategy to continue after external support has ended.

Table 1. Set of indicators and definition

When defining the indicators to be used for M&E, it is necessary to make sure that all stakeholders have adequate knowledge of them and that everyone is 'speaking the same language' when referring to them.

For this reason, it may be useful to define each of the indicators according to the model proposed in the table below.

Indicator name
Calculation formula: Define denominators, percentages… for calculation.
Definition: That which includes the different aspects to be considered.
Source of data: Place where data are collected.
Disaggregation: Items on which it is necessary to have specific data by groups, related to gender, inclusion, geographical area, age groups, employment status, level of health literacy…
Periodicity: Frequency of measurement.
Observations: Anything that needs to be added.

Table 2. Model to define an indicator

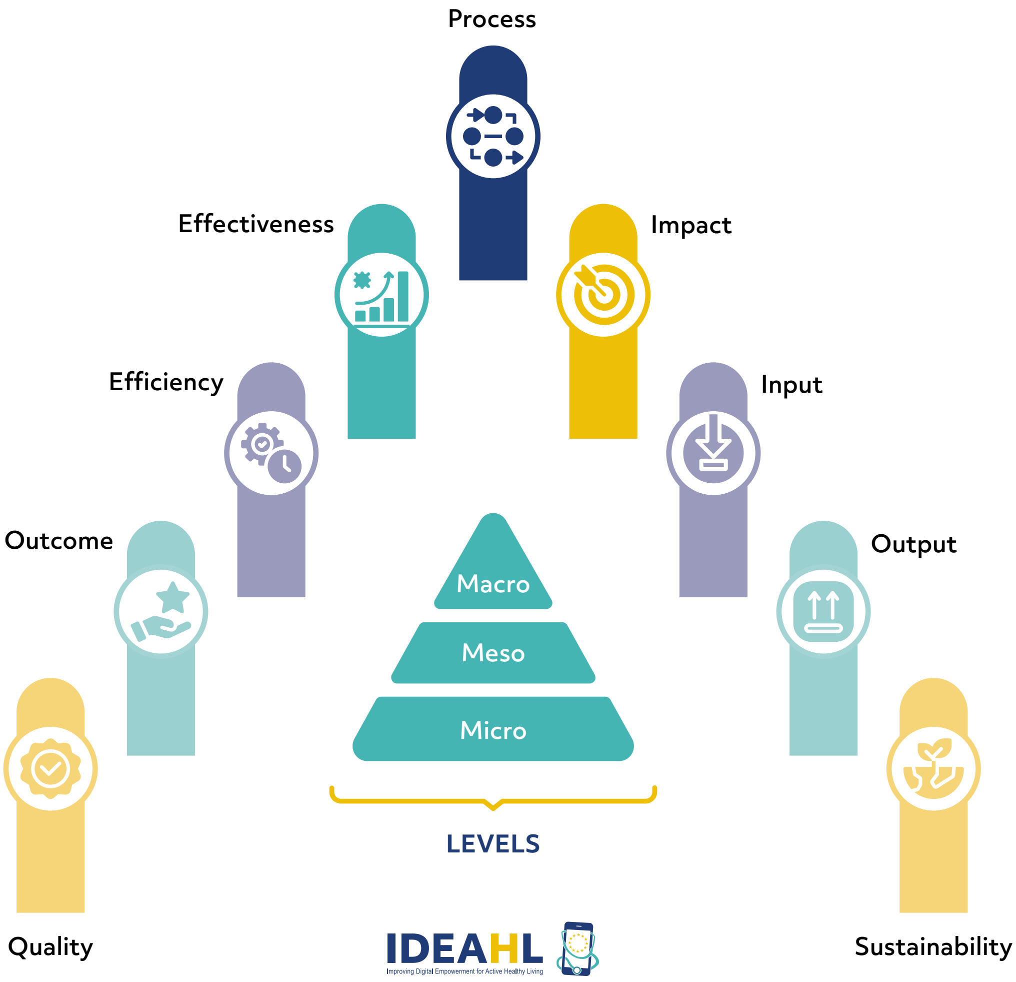


Figure 4. Levels of evaluation and indicators

3.3.3. Data management and processing considerations

When planning and carrying out the M&E of an intervention, different aspects must be considered.

First, the analysis of the interventions and the collection of data must always respect the legislation in force at the different levels (micro, meso, macro). In addition, the ethical aspects that guarantee its principles must also be taken into consideration. It is essential to follow best practices to protect the data collected about users and be completely transparent about its use, thereby ensuring privacy, security and responsible data management. To protect users and organisations themselves, it would be helpful to establish an appropriate procedure for collecting and analysing data responsibly and securely and to ensure that it is known and followed by all parties involved.

When collecting the data needed for M&E, it is important to determine precisely what data is needed. Appropriate data elements must be determined according to the objectives and parameters of the overall strategy and the necessary particularities. It is not recommended to collect as much data as possible, as this can overwhelm the system and overload different stakeholders with additional tasks to the detriment of completing the required actions. Furthermore, systematising the collection of quantifiable data and using technology so that the agents involved do not have to make extra efforts to collect the data, will help monitor the entire process and achieve objectives.

Nowadays, digital solutions allow constant monitoring of user activity, consumption, and content creation. Analysing usage data is essential to driving effective system management. It can make an important contribution to the M&E of the strategy and point out where changes may be necessary. Taking advantage of available resources is essential to ensure the sustainability of interventions.

It is important to ensure that there are several 'points of view' in the evaluation of the strategy. At this level, it would be necessary to involve in the evaluation those actors who provide information from the creation and development of the strategy to its implementation and final use. Since automatically collected data may not reflect all the needs, concerns or opinions of the different stakeholders involved, it is recommended, especially in the implementation of new strategies, that M&E include qualitative and quantitative indicators.

Whenever possible, it is ideal to develop analysis profiles (of individuals and/or target groups) to better understand whether the strategy responds to their specific needs, as these can be diluted among the overall results.

Finally, it is necessary to keep in mind that any institution engaged in data analysis must ensure that both the data itself and the analytical processes are open to public review. Naturally, this must be executed in a way that protects the user's privacy, as mentioned above. Furthermore, the organisation has the obligation to provide end users with clear and easily understandable explanations about the origin of the data, the methodology applied in the analysis of the data and the resulting insights.

3.3.4. Digital health literacy tools

Health literacy is defined by the WHO as the social and cognitive skills that determine the level of motivation and the ability to access, understand and use information to promote and maintain good health.

It is an important component in the search for health and well-being of the population, closely linked to health status, capable of mitigating health inequalities and promoting the empowerment and equity of the population. Low health literacy is associated with poorer general health and higher mortality. Despite its importance, it is still often overlooked in both public health efforts and medical research, which is why it has been integrated as a key measure in the EU Global Health Strategy.

As mentioned previously, it is advisable to align the M&E indicators at different levels. In this regard, the measurement of digital health literacy is no exception.

In order to unify dHL measurements, it is recommended to identify and adopt a set of internationally recognised indicators and measures. Although existing tools should be further developed, the use of validated, translated and updated tools contributes to unifying measurements and allows comparison between different environments.

The work carried out by the IDEAHL consortium has identified a series of validated tools translated into different languages that can be used:

Language	eHEALS	eHLA	eHLQ	DHLI	DHLI-COVID	eHEALS career	HLS19-DIGI
Danish		✓	✓	✓			✓
English	✓	✓	✓	✓		✓	✓
Finnish							
French	✓						✓
German	✓	✓		✓	✓		✓
Italian	✓				✓		✓
Portuguese	✓			✓			✓
Spanish	✓		✓		✓		
Swedish	✓						

Table 3. Digital health literacy tools

In interventions, especially those of new implementation, it is important to create a baseline or starting value and point out the objective values linked to the success of our intervention.

Another aspect that often goes unnoticed, but is necessary, is to evaluate the skills and competencies of health professionals to communicate effectively with people with different levels of health literacy.

3.3.5. Gender and inclusion perspective in M&E

Gender and inclusion aspects are transversal elements of the EU dHL Strategy that must be taken into account when planning and implementing M&E.

In selecting indicators, differential experiences and impacts by gender, and how they interact with other forms of discrimination in a specific context (e.g., age, race and ethnicity, social status), must be carefully considered. Regardless of the intervention, evaluators should consider how gender-based power dynamics intersect and interact with other forms of discrimination to affect intervention implementation and outcomes.

Applying a gender perspective can provide evidence for monitoring and evaluation and at the same time support the achievement of gender equality goals.

Practical steps to apply a gender/inclusion lens to evaluation criteria include:

- Stakeholders who work inclusively and lead to appropriate participation in decision-making, data collection, analysis and sharing of findings.
- Consider the extent to which gender or other aspects interact with other social barriers to jeopardise equal opportunities in intervention.
- Consider how an intervention interacts with the legislative, economic, political, religious and sociocultural environment to better interpret the different experiences and impacts of stakeholders.
- In this sense, whenever possible and relevant, the indicators that measure our intervention must be disaggregated by gender or taking into account the aspects in which inclusivity is sought (age, ethnicity, disability…).

3.3.6. Evaluation committee

To coordinate the evaluation of the EU dHL Strategy, a specific M&E committee and subcommittees should be established at national, regional and/or local level. Their functions would be:

- **Audit and feedback:** carried out periodically and results followed up with recommendations for improvement delivered in print or face-to-face or through focus group discussions to identify and overcome barriers to compliance with the strategy. The M&E committee should ensure that the strategic intervention is targeting the intended audience that programme activities are being implemented as planned, that the programme is achieving its desired outcomes and analyse what impact it is having on the target population and proposed solutions and adjustments.
- **Reminders:** follow-up instructions in print, email or face-to-face.
- **Supervision:** carried out by a (national/regional) supervisor designed at regular (pre-established) intervals and possibly combined with face-to-face discussions based on the results.

4

Strategy guidelines

4.1. Digital components toolkit

4.1.1. Training and skills development

Advance digital literacy in healthcare: Invest in digital literacy programmes and digital health training for citizens and healthcare professionals. This includes collaborating with educational institutions, promoting participation in digital health literacy programmes, and staying updated on advancements in digital health tools and technologies.

Bridge education to practice: incorporate dHL into formal curricula, from schools to professional training programmes by integrating critical evaluation skills for online health information and promoting responsible digital navigation.

Adapt digital interventions to users' skills and preferences: Use ubiquitous learning systems, massive online courses, and gamification features, as well as provide specific resources and tools for different user groups. Collaborate with technology companies and app developers to create user-friendly mobile applications.

Promote interdisciplinarity collaboration for dHL: Involve healthcare professionals, academic organisations and non-governmental organisations to enhance digital health education and skill development. This includes establishing guidelines and standards for co-creation processes, promoting knowledge transfer, and training facilitators and coordinators involved in co-creation initiatives.

Use evidence-based approaches for targeted interventions: Consider specific populations and use a variety of intervention methods. Use interventions supported by scientific research, adapting training programmes to the needs and preferences of target populations, and continuously evaluating and improving initiatives through participant feedback.

4.1.2. Content and curriculum

Partner with technology innovators: Collaborate with technology companies and app developers to create and provide personalised health tracking, educational resources, and access to support networks.

Integrate health literacy into curricula: Integrate health literacy and digital health literacy into educational curricula for healthcare professionals, researchers, teachers, and students at all levels, ensuring continuous and planned education in these areas.

Improve the effectiveness of digital health interventions: Take advantage of incorporating interactive and engaging content, such as through the use of demos, role-plays, group discussions, case studies, videos, or animations.

Ensure the reliability and usability of digital health tools: Use established usability scales and criteria, comply with relevant medical device regulations, and regularly review and update the content and curriculum of apps.

Build strategic collaborations: Foster partnerships and collaborations among various stakeholders, including healthcare professionals, educators, policy makers, technology companies, and community leaders, to develop relevant and evidence-based content, conduct capacity-building workshops, and assess and improve health literacy initiatives.

4.1.3. Evaluation and monitoring

Engage with the target audience and seek feedback: Actively involve the target audience in interventions by conducting surveys, seeking user suggestions, and incorporating their feedback to enhance the relevance and effectiveness of interventions.

Utilise technology for assessment and monitoring: Leverage technology, such as health apps and wearable devices, to assess participants’ comprehension, monitor risk levels, facilitate physical activity monitoring, and evaluate symptoms and behavioural patterns.

Conduct comprehensive evaluation and monitoring: Establish robust evaluation and monitoring mechanisms to assess the impact, effectiveness, and sustainability of interventions, including pre- and post-intervention assessments, surveys, focus groups, observations, programme records, and health outcomes data.

Assess and address health literacy: Evaluate and monitor health literacy levels among patients and healthcare professionals, apply screening methodologies, and adapt interventions to fill health literacy gaps. Assess the quality of health information provided and prioritise the evaluation of the usability of digital health tools.

Implement policy development and cross-sector cooperation: Assess the impact and effectiveness of existing health literacy policies, strategies, and action plans. Promote cross-sector cooperation, establish monitoring systems, and regularly evaluate and adjust initiatives to ensure relevance, effectiveness, and successful outcomes.

4.1.4. Policy and strategy

Engage in tech decision-making: Enable active participation of individuals in decision-making processes related to technology, providing them with greater control and autonomy in its use.

Unite stakeholders: Foster collaboration and synergy among different stakeholders, such as governments, businesses, and civil society, to address technological challenges together.

Balance tech policies: Implement policies and strategies that improve the quality of life for the population, taking into account the social, economic, and environmental impacts of technology.

Address real problems: Align technological research and innovation with user expectations and needs, focusing on developing solutions that address real-world problems and generate a positive impact on society.

Ensure the promotion of a (digital) health literacy atlas to identify and use best practices:

- Improve the atlas (GALH) by regularly updating and expanding its content, collaborating with international organisations and research institutions to gather comprehensive data from a wider range of countries.
- Improve language support for broader accessibility and provide user-friendly summaries of health literacy policies and initiatives.
- Enhance the platform's design, engage in user testing, and actively promote the atlas to raise awareness among key stakeholders.
- Establish a systematic process for data collection and verification to ensure up-to-date and accurate information.

4.2. Health literacy components toolkit

4.2.1. Access to the information

Personalise information for different audience: Tailor content to specific target groups, considering their unique information needs and interests. Provide relevant and personalised health information, especially for children, adolescents, and other participants.

Improve the accessibility of online tools: Enhance the accessibility and user-friendliness of online tools and platforms to ensure easier access to health information and services for the regions adopting them and the target population.

Engage citizens in usability testing: Involve citizens in usability testing and feedback processes to improve the usability and effectiveness of eHealth tools. Actively engage users to enhance user experience and adapt tools accordingly.

Build trust in digital health for citizens: Promote digital health literacy and the use of reliable health resources. Provide guidance on effectively using health apps, distinguishing trustworthy information sources, and addressing language barriers to ensure individuals can make informed decisions about their well-being.

Strengthen health collaboration: Promote collaboration, interoperability, and integration among healthcare systems and providers. Establish partnerships with community organisations, influencers, and educational institutions to expand the reach of interventions and promote the access to digital health literacy.

4.2.2. Understanding the information

Promote health literacy awareness and understanding: Develop clear and accessible communication materials and tools in multiple languages, utilising plain language, visual aids, and culturally appropriate approaches to empower individuals to make informed decisions about their health.

Enhance digital health literacy and competence: Provide training and support for healthcare professionals and individuals to effectively navigate and use digital health tools and technologies, as well as user participation in the design process.

Ensure effective communication and comprehension: Tailor information to individual abilities and learning styles, using interactive and multimedia resources while avoiding information overload. Encourage teach back-method and other strategies to ensure patients understand the information provided by healthcare professionals.

Foster collaboration and stakeholder involvement:

- Engage NGOs, policy makers, and healthcare providers as key stakeholders to promote health literacy, provide digital support, and prevention services.
- Emphasise the importance of cooperation and expertise sharing among professionals.

Evaluate, monitor, and improve understanding of information:

- Regularly evaluate health literacy levels and the effectiveness of health literacy initiatives.
- Develop standardised assessment tools, measure outcomes, and implement continuous improvement strategies to promote lifelong learning and continuous development of health literacy competences.

4.2.3. Critical appraisal of the information

Ensure accuracy and evaluation of health information: Encourage individuals to verify the accuracy of health information before making decisions, provide guidelines for critically evaluating sources, and develop measures to assess the credibility of online information.

Enhance usability and safety of digital health tools and technologies: Improve the usability of digital platforms, involve users in the design process, validate eHealth tools, establish mechanisms for information appraisal within healthcare organisations, and monitor the safety and effectiveness of digital apps.

Promote effective communication and understanding: Tailor communication to different age groups and cultural backgrounds, foster cross-cultural communication, emphasise the dialogue and trust-building aspects of informed consent, and provide clear and comprehensible information to patients.

Foster collaboration and cooperation: Encourage collaboration between public health organisations, healthcare professionals, policy makers, and researchers to promote health literacy, ensure credibility of digital health information, and enhance cooperation between education/academia and the workforce.

Evaluate, monitor, and improve relevance and quality: Conduct long-term studies to assess adherence and effectiveness of digital interventions, evaluate health literacy initiatives, develop standardised assessment tools, and continuously evaluate and improve health literacy work and levels in different populations.

4.2.4. Application of the information

Streamline human-technology interaction: Simplify the interface between humans and technology, prioritising user-centred design principles. This includes creating visually appealing and intuitive interfaces, incorporating multiple information channels, and providing quick and simple user support.

Empower individuals in healthcare: Encourage active participation in healthcare by asking questions and seeking clarification from healthcare professionals. Design and disseminate practical tools and resources that facilitate the application of health information in real-life contexts. Develop initiatives and programmes that empower individuals and patients to apply health information in their decision-making processes.

Enhance health literacy: Promote source verification, encourage reading and storytelling about the positive meanings of health literacy, and strengthen media and literature education. Identify and promote the meaning of health literacy in society to enrich health literacy for all. Strengthen cooperation and expertise of professionals in health literacy-related areas.

Optimize health information systems: Develop concrete action models for multi-professional exchange of information and integrate the health information system to minimise delays and reduce implementation costs.

Foster collaboration and data management: Collaborate with information experts and enhance information application capabilities of telemedicine tools. Invest in health data management systems to process clinical, administrative, and research data.

4.3. Cross-cutting components toolkit

4.3.1. Accessibility

Promote accessibility and usability:

- Enhance accessibility and usability of interventions, digital platforms, and health-related content by catering to diverse preferences and needs, addressing disparities, and ensuring compliance with accessibility standards and guidelines.
- Consider physical and cognitive disabilities, digital literacy levels, and the use of user-friendly language, visual aids, and alternative formats to accommodate different audiences.

Foster transparency and stakeholder engagement:

- Ensure transparency in data collection, analysis, and privacy protection. Encourage meaningful participation of stakeholders by providing accessible information, fostering a culture of sharing ideas, embracing conflicting opinions, and addressing stakeholder interests.
- Develop accessible governance structures, research documentation, and communication services.

4.3.2. Collaboration

Foster collaboration and engagement:

- Encourage collaboration between patients, citizens, healthcare professionals, and stakeholders through shared decision-making, patient engagement, co-creation of health policies, and projects.
- Establish multidisciplinary care coordination teams, promote knowledge exchange, and nurture collaborations between public and private stakeholders.
- Involve highly engaged healthcare professionals and ensure continuous communication to all relevant stakeholders.

Strengthen cross-sectoral cooperation:

- Promote cross-sectoral engagement in health literacy policies, facilitate multiprofessional exchange of information, and enhance collaboration between different professional groups.
- Support cooperation between EU-funded projects for cross-fertilisation and synergies.
- Maintain public trust by engaging the data subject in health literacy, fostering trust between public and private organisations, and involving patients and the public as central actors in the development of learning health systems.

4.3.3. Equity

Improve accessibility and promote health equity:

- Enhance accessibility of healthcare services and facilities to ensure equitable access for all individuals, including vulnerable populations and those with socioeconomic disadvantages.
- Design policies and programmes that reduce literacy gaps and address cultural barriers.
- Prioritise equal representation and inclusion of people of all ages, genders, and backgrounds in clinical research to provide equal opportunities and benefits.
- Address the specific needs of different social groups, such as disabled people, older people, and people living in poverty, and overcome barriers related to digital skills, devices, and support.

Promote equity and respect autonomy:

- Recognise the importance of equity in health literacy and ensure that all citizens have the right to self-determination and equal access to care and services.
- Respect the health interests of participants in research and communicate new information in an understandable and respectful manner.
- Involve citizens and participating individuals in formulating research questions to address their health needs.
- Strengthen social dialogue and cooperation among stakeholders to identify and address equity-related challenges.

4.3.4. Ethics and privacy

Ethical and privacy considerations:

- Health literacy strategies should incorporate ethical and social aspects, including gender, inclusion, privacy, and ethics.
- Emphasise the importance of confidentiality and ensure proper collection and use of health information while respecting individuals' rights to opt out and safeguarding personal data confidentiality and security.

Improve informed consent processes:

- Implement dynamic consent platforms that accommodate changes in information and attitudes throughout the process.
- Utilise electronic media and mixed-format approaches to support the informed consent process.
- Consider data collection and accessibility early on to ensure effective use and presentation to users.

The special emphasis that the IDEAHL project places on ethics and privacy is reflected in the improved toolkits for policy makers and health and care providers.

ETHICS AND PRIVACY TOOLKITS

Ethics and privacy recommendations for policy makers

Establish leadership at the governmental level about a data structure that encompasses the different services in health and social care, designing the data collection based on the citizen's care pathway.

Consider ethical principles such as beneficence, non-maleficence, justice, and autonomy when developing health-related information, policies and services, including the use of encryption and secure data storage. These principles can guide the development of interventions that are effective, safe and respectful of individuals' rights and dignity.

Put strong efforts on the protection of the privacy and confidentiality of individuals' personal information, and to ensure that interventions to improve digital health literacy consider the basic principles of bioethics and the rights and dignity of individuals, to be designed and implemented in an ethical and equitable manner.

Promote health literacy friendliness in all digital communications and technologies, having dHL contributing to decrease inequalities and social exclusion.

Promote collection mechanisms and consistency between datasets, with a portfolio of non-sensitive health data that can be shared without endangering the confidentiality of the person's most vulnerable data, always in compliance with GDPR rules.

Develop forward-looking health policies that are clear and easily understandable, realistic to implement and encompass sustainability aspects, highlighting the role of dHL in laws, strategies, and action plans related to health information innovation and health services delivery.

Include principles of ethical and meaningful communication in policy making to promote trust, namely by providing reliable information to citizens on the importance of certain actions for their own benefit or that of the community.

Create and establish a system for monitoring and assessing dHL at national level (accompanying similar efforts in other countries, notably at European level).

Support an empowering approach to the use of digital communications and technology, with the necessary resources available for citizens to be informed and guided in the process.

Promote measures to train the health workforce with the adequate skills for addressing patients and promote their empowerment towards self-management.

Have grassroot organisations, e.g., municipalities, which report on the health and well-being of the population in their area and include dHL in the indicators.

Provide information to citizens on how their health information is stored and secured, and keep them inform about how their information is being used and who has access to it. Increase the understanding on the potential risks and benefits of using digital technologies and on how to use digital tools safely and securely, including information on how to protect personal and confidential information when using digital tools.

Ethics and privacy recommendations for health and care providers

Ensure that health and care professionals are involved and engaged in the design of health and care software.

Acknowledge that the information that is not relevant does not have to be taken. There is a general feeling that more and more irrelevant data is requested, but there is the need to be aware of the importance of data minimisation and anonymity.

Acquire or be given the necessary resources to guide citizens, learning how to address patients and how to teach/train them, enhancing their (d)HL.

Learn how to use new digital tools for data collection as well as for eHealth in general, always in compliance with GDPR rules.

Search for or be provided with easy-to-use tools that are not time-consuming to collect quality data and participate in research.

Update curricula and internships for young professionals, enabling them to be more prone to accept innovation and encourage patient self-management.

Have the GP role reinforced as the pivotal point to support citizens and patients in their (d)HL development.

Evaluate the need to rearrange institutional procedures and workflows to apply and promote dHL, giving professionals time and effort to engage people and adapt to new approaches.

Understand and respond to different types of patients' vulnerabilities.

Prepare caregivers to support the dHL process and to that aim a deeper understanding of the profile of the carers in society is needed.

4.3.5. Gender

Promote gender-sensitive approaches in health literacy:

- Incorporate gender-specific considerations into health literacy interventions and communication strategies, taking into account the different health needs, concerns, and roles of women, men and all existing sexual diversity (LGBTQIA+).
- Tailor the interventions accordingly to ensure effective and inclusive health messages.

Promote gender equality through strategies for inclusive policies and leadership:

- Ensure gender equality and eliminate disparities in healthcare by addressing gender biases, promoting women's and sexual and gender minorities' entrepreneurship and leadership.
- Integrate gender considerations into policies and guidelines related to education, training, and the labour market.

4.3.6. Inclusion

Tailor interventions: Outreach efforts to address the specific needs of different target groups, including older adults, women in remote areas, and underprivileged populations. Consider factors such as language, culture, socioeconomic status, and accessibility to ensure inclusivity and effectiveness.

Improve cultural and religious acceptability: Promote cross-cultural research and enhance communication in healthcare by fostering cultural understanding, capturing patient backgrounds, supporting relevant projects, and improving coordination between health information systems.

Address diverse needs in digital services: Include minority groups and individuals with disabilities, in the planning, development, and delivery of digital services and health literacy programmes. Promote personalized approaches, cultural sensitivity, and address factors such as age, gender, and cognitive abilities to enhance inclusivity and equitable outcomes.

Improve health literacy: Enhance health education through accessible and multimedia-based approaches. Simplify written materials to a 5th-grade reading level, incorporate multimedia principles in video formats, and utilise clear visuals with captions. These strategies aim to improve comprehension, particularly in the context of mobile technologies and diverse literacy levels.

As with ethics and privacy, the IDEAHL project has placed greater emphasis on gender and inclusion issues, and specific gender and inclusion toolkits have been developed for policy makers and health and care providers.

GENDER AND INCLUSION TOOLKITS

Gender and inclusion recommendations for policy makers

Focus on identifying groups that already are, or may become, disadvantaged in relation to health care and (d)HL. Health care bias and systemic failures such as racism and discrimination that exist in health care systems risk being copied into eHealth systems. Ensure these groups are considered in the design of policies and action plans.

Build dHL and eHealth strategies and interventions with an inclusive approach in mind, which recognises vulnerable or marginalised groups such as older persons, minority ethnicity, language abilities, socioeconomic level, migrants, people with low education level, those living in marginal geographic areas, and people with physical and intellectual disabilities.

Inclusive design is key to addressing the issues of access and low (d)HL; all types of users must be involved and considered from the very outset of planning a design. A 'one size fits all' or 'build it and they will come' approaches will lead to exclusion and exacerbate already existing inequities in the health care system. To acknowledge this, use images and iconography that are gender sensitive, inclusive and responsive to all groups.

Consider, within dHL and eHealth strategies and interventions' development, the challenges of lack of Internet and ICT infrastructure access and a low awareness of data protection and rights as patients, which can be common for disadvantaged groups. Do not forget to have end-users involved in the usability testing of the digital solutions.

Always take gender into account in health and care policies and related (d)HL interventions. Gender mainstreaming shall underpin any action in relation to dHL. Gender inequality and sexual minorities' greater social vulnerability contributes to the risk for discrimination and inequalities in access to health and care, and these intersect with other factors, e.g., race, religion, socioeconomic conditions, age, disabilities, etc.

When planning dHL/eHealth strategies and interventions, consider the higher risk of gender-based violence and the great health-related challenges experienced by gender and sexual minorities. Additionally, consider that women live longer than men but have less healthy life years. The poor health that older women may experience can make their health needs more demanding and their ability and/or willingness to adopt (d)HL smaller.

Address healthcare workforce gender bias. The healthcare workforce is overwhelmingly female, but women tend to be underrepresented in decision-making positions. For example, in the technological areas, there is a clear male bias, so it is necessary to incorporate women in the development of devices and in the training of artificial intelligence engines, as well as provide training on sex and gender issues to programmers and AI developers.

While recognising where extra support is needed for marginalised or disadvantaged groups, it is also important to acknowledge that sometimes a patient simply does not want to get involved with dHL/eHealth. While all offers of support and help should be given to such patients, they should not be put under pressure to participate and a decision to abstain must be respected.

Enhance the collaboration between different stakeholders, including governments, healthcare providers, and community organisations, to promote health inclusion and improve access to health-related information and services for all citizens, with a focus on addressing health inequalities. Remember that much of the dHL work is publicly funded but most industry stakeholders are private and these groups must be included in the development and ongoing work around dHL.

Leverage the potential for digital health technologies to help promote greater gender equity and inclusion, particularly through initiatives that empower women, as well as sexual and gender minorities, to take an active role in their own health and well-being.

Focus on the four dimensions of the commonly agreed framework for closing the digital divide identified by the United Nations: (1) providing universal access to the internet and ICT infrastructures, (2) reducing the excessive cost of internet connectivity and ICT devices, (3) investing in digital literacy and skills for citizens, and (4) increasing the motivation and trust of the citizens by raising awareness of the benefits of digital health literacy and digital skills and of relevant content.

Education with sex and gender specific contents is necessary for health and care professionals. In the university, training offers and curricula that promote equality and awareness of gender differences between men and women, as well as sensitive engagement with sexual and gender minorities can contribute tof generating awareness towards the need for differentiated approaches.

Enhance the use of digital tools as a means to detect and prevent gender-based violence, namely promoting the development and increasing professionals' access to tools that raise awareness and assist in detection. Additionally, build capacity of potential victims to identify situations of risk or actual violence and ensure availability to tools that can facilitate assistance, with no control or access by third parties.

Rely on the training capacity of Third Sector organisations and provide them with digital resources to promote dHL for citizens, especially with a positive and empathetic gender perspective, establishing alliances between these entities and the health policy managers to approach these groups and identify and transfer their needs to health policies and plans.

Gender and inclusion recommendations for health and care providers

Receive proper training and guidance on gender perspective, interculturality and inclusion of health literacy and digital health literacy, as well as be trained to help patients approach and adopt dHL and eHealth and how to use the different digital healthcare infrastructures that their patients are expected to use.

Develop and use dedicated user-friendly materials and tools for their patients, especially those in more vulnerable situations, such as LGBTQIA+ or older women.

Identify people experiencing gender-based violence, and ensure the role of health and care professional in supporting them does not get lost in the transition to eHealth.

Take part in the development of tools and interventions to encourage dHL and eHealth use, and council patients in what tools and actions are useful for them specifically. Health and care professionals should also be encouraged to participate in the elaboration of dHL related policies and work closely with policy makers.

Promote use of digital tools for health among patients but at the same time recognise when a patient wishes to continue with personal visits or contact, and not pressure a patient into adopting dHL measures.

Search for training and proficiency in the use of digital tools to avoid feelings of techno stress. It is important that health and care professionals provide a good example to patients to encourage trust and use of digital tools.

Consider well the nuances of the caregiver's role, namely avoid associating the caregiver role exclusively to women and offer the service, intervention and/or device to them as end-users, not as mediators or gatekeepers to the health of the rest of the family. Promote self-care in men and their role of men as promoters of family health emphasising new masculinities.

4.3.7. Participation

Empower healthcare through collaborative engagement and patient-centred initiatives: Active participation and involvement of individuals, target groups, and stakeholders in the development, implementation, and evaluation of healthcare initiatives. Prioritise user acceptance, incorporate user experiences and testimonials, and involve diverse stakeholders to ensure patient-centredness, empowerment, and inclusivity.

Ensure culturally appropriate health care: Integrate health literacy and cultural-specific approaches into communication, co-creation processes, and partnerships. Consider the specific needs of diverse populations, including older adults and minority groups, and tailor interventions to enhance understanding, engagement, and health competence.

4.3.8. Social environment

Promote inclusive engagement and adaptive strategies: Engaged participation, while considering country-specific variations and adapting to the specific needs and conditions of the organisations involved. This entails promoting dialogue and rethinking informed consent as an outcome of comprehensive, clear, and empathetic communication based on trust.

Promote well-being and proactive care: Develop interventions and services that prioritise well-being, prevention of mental illness, and proactive, personalised care. This includes addressing socio-economic factors, building trust through personal interactions, targeting vulnerable populations, and integrating health and social care into existing systems, taking into account the social environment.

4.3.9. Sustainability

Promote innovation and sustainability of health infraestructure:

- Encourage the creation of new businesses, research and development activities, and the use of digital tools and technologies to improve healthcare infrastructure.
- Reinvest cost savings achieved through the implementation of these tools back into the healthcare system, promoting efficiency and sustainability.

Promote integration and adoption within the healthcare system:

- Support the utilisation of data-enabled research and innovation.
- Integrate measuring instruments and data recording into existing electronic medical systems and records.
- Ensure explicit commitment from relevant authorities to adopt and integrate programmes into the healthcare system norm.
- Develop transition plans, guidelines, and training to facilitate smooth integration and widespread adoption.

4.4. Monitoring and evaluation toolkit

Implementing a robust monitoring and evaluation process for strategies such as the Digital Health Literacy Strategy is essential to assess progress, promote accountability, inform decision making, optimise resource allocation, facilitate learning and improvement, and demonstrate the impact of the strategy on improving levels of digital health literacy.

The toolkit presented below provides a number of key recommendations to consider when setting up a monitoring and evaluation process for a digital health literacy intervention.

Tailored analysis profiles: Develop analysis profiles –of individuals and/or target groups– to ensure that the intervention is aligned with their specific needs and requirements.

Responsible and secure: Data practices establish stringent measures for the responsible and secure collection and analysis of data, with a focus on safeguarding user privacy and organisational interests.

Thoughtful data element selection: Carefully determine the data elements to be collected, avoiding data overload that could overwhelm the system and stakeholders. Align data collection with the overarching strategy's objectives and parameters.

Inclusive evaluation approach: Ensure diverse perspectives in the evaluation process, involving stakeholders from strategy creation or policy design through to implementation and use. Include both qualitative and quantitative SMART indicators, especially for new strategies.

Data privacy and transparency: Maintain the highest standards of privacy, security, and responsible data management. Be fully transparent about data usage and protection practices.

Algorithmic responsibility: Embrace algorithmic responsibility by making data and analytical processes open to public scrutiny while safeguarding user privacy. Provide clear, easily comprehensible explanations of data origin, analysis methodologies, and insights for end-users.

Data-driven, decision-making: Leverage digital solutions to continuously monitor user activity, consumption, and content creation. Analyse usage data to inform effective system management and contribute to strategy monitoring and evaluation.

Resource optimisation: Efficiently manage available resources to ensure the sustainability of interventions. Maximise the utilisation of existing resources to support successful strategy implementation.

Unified measurement and baselines: To unify digital health literacy measurements, adopt internationally recognised SMART indicators and tools. Establish baseline values and success-linked objectives for interventions, especially new implementations.

Health professional communication skills: Evaluate the communication skills of health professionals to effectively engage individuals with varying health literacy levels.

Integration of gender and inclusion: Incorporate gender and inclusion aspects into the EU Digital Health Literacy Strategy across all stages of planning and monitoring.

Consider intersectionality: When selecting indicators, account for how gender intersects with other forms of discrimination (e.g., age, race, social status) to affect intervention outcomes.

Gender perspective for evidence and equality: Applying a gender perspective in Monitoring and Evaluation supports both evidence generation and the pursuit of gender equality goals.

Practical steps for gender and inclusion: Implement practical measures, including inclusive stakeholder engagement, analysis of intersectional barriers, consideration of the intervention's contextual interactions, and data disaggregation by gender and other inclusivity factors where relevant.

5

Supplementary material and acknowledgments

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5.2. Annex

KEY PROJECTS

EU funded PROJECTS and NETWORKS (n=31)

AI4AL
Artificial Intelligence 4 Adult Learning.
https://www.ai4al.eu/

ALAMEDA
Bridging the Early Diagnosis and Treatment Gap of Brain Diseases via Smart, Connected, Proactive and Evidence-based Technological Interventions Fact Sheet Project Information Project description Lowering treatment costs for brain disorders through AI.
https://cordis.europa.eu/project/id/101017558

ASCAPE
Artificial intelligence Supporting CAncer Patients across Europe.
https://cordis.europa.eu/project/id/875351

BRAINTEASER
BRinging Artificial INTelligencE home for a better cAre of amyotrophic lateral sclerosis and multiple SclERosis.
https://cordis.europa.eu/project/id/101017598

ConcePTION
Building an ecosystem for better monitoring and communicating of medication safety in pregnancy and breastfeeding: validated and regulatory endorsed workflows for fast, optimised evidence generation.
https://cordis.europa.eu/project/id/821520

DHU
Digital Health Uptake.
https://digitalhealthuptake.eu/

DigiCare4You
An intersectoral innovative solution involving DIGItal tools, empowering families and integrating community CARE services for the prevention and management of type 2 diabetes and hypertension.
https://cordis.europa.eu/project/id/945246

Digital Health Europe
Support to a Digital Health and Care Innovation initiative in the context of Digital Single Market strategy.
https://cordis.europa.eu/project/id/826353

D-PAIDEIA
Improving the conversion efficiency of infrared light to energy.
https://cordis.europa.eu/project/id/816313

dRural
The service marketplace for European rural areas.
https://cordis.europa.eu/project/id/101017304

ECHAlliance
ECHAlliance Global Connection.
https://echalliance.com/

EmpoweredLifeYears
The Demography of Sustainable Human Wellbeing.
https://cordis.europa.eu/project/id/741105

EQUALS-EU
Promoting gender equality in social innovation.
https://cordis.europa.eu/project/id/101006396

FAKEOLOGY
Fake news and pseudo-science as post-modern mythology: The case of the anti-vaccination movement.
https://cordis.europa.eu/project/id/844167

FEMaLe
Finding Endometriosis using Machine Learning.
https://cordis.europa.eu/project/id/101017562

HARMONY
Healthcare Alliance for Resourceful Medicines Offensive against Neoplasms in HematologY – Sofia ref.: 116026.
https://cordis.europa.eu/project/id/116026

HARMONY PLUS
Haematological malignancies data analysis to improve access to new therapies.
https://cordis.europa.eu/project/id/945406

iBOX
An Automated Remote Sensing System for Space Scientific Instrumentation.
https://ieeexplore.ieee.org/document/9856033

IC-Health
Improving digital health literacy in Europe.
https://cordis.europa.eu/project/id/727474/es

I-CONSENT
Improving the guidelines for Informed Consent, including vulnerable populations, under a gender perspective.
https://cordis.europa.eu/project/id/741856

iHELP
Personalised Health Monitoring and Decision Support Based on Artificial Intelligence and Holistic Health Records.
https://cordis.europa.eu/project/id/101017441

LETHE
A personalized prediction and intervention model for early detection and reduction of risk factors causing dementia, based on AI and distributed Machine Learning.
https://cordis.europa.eu/project/id/101017405

MeaningfulMobility
Meaningful Mobility: a novel approach to movement within and between places in later life.
https://cordis.europa.eu/project/id/802202

Net4Age-Friendly
COST action 19136 Net4Age-friendly "International Interdisciplinary Network on health and wellbeing in an age-friendly digital world" (2020-2024).
https://www.net4age.eu/

SCALA
Scale-up of Prevention and Management of Alcohol Use Disorders and Comorbid Depression in Latin America.
https://cordis.europa.eu/project/id/778048

SCALE-AHA
Support to scaling up of innovations in Active and Healthy Ageing.
https://www.scale-aha.eu/

SHAFE Network
Stakeholders Network addressing the political agenda of Europe to support digital and social transformation and participation.
https://shafe.eu/network/

SHIFT-HUB
Pan-European network for smart health solutions.
https://cordis.europa.eu/project/id/101095720

SOS TIPS
Smart Online Searching To Increase Patient Safety.
https://cordis.europa.eu/project/id/101028644

TIMELY
A patient-centered early risk prediction, prevention, and intervention platform to support the continuum of care in coronary artery disease (CAD) using eHealth and artificial intelligence.
https://cordis.europa.eu/project/id/101017424

WARIFA
Watching the risk factors: Artificial intelligence and the prevention of chronic conditions.
https://cordis.europa.eu/project/id/101017385

5.3. List of acronyms

ADIPER	ADI & SALU SERSOC SLU
ALL DIGITAL	Digital Skills Across Europe
CDC	Cáritas Diocesana de Coimbra
CE	Consulta Europa Projects and Innovation
CEI	Central European Initiative, Executive Secretariat
COST	European Cooperation in Science and Technology
CSPA	Consejería de Salud del Principado de Asturias
dHL	Digital health literacy
DHLI	The Digital Health Literacy Instrument
EC	European Commission
EHDS	European health data space
eHEALS	The eHealth Literacy Scale
eHLA	The eHealth Literacy Assessment toolkit
eHLQ	The eHealth Literacy Questionnaire
EIWH	European Institute of Women's Health
E-seniors	Initiation des seniors au NTIC association [Association for the introduction of senior citizens to NTIC]
EU	European Union
FICYT	Fundación para el Fomento en Asturias de la Investigación Científica Aplicada y la Tecnología [Foundation for the Promotion in Asturias of Applied Scientific Research and Technology]
GALH	Global Atlas of Literacies for Health
GDPR	General Data Protection Regulation
GP	General practitioner
HL	Health literacy

(d)HL	(Digital) health literacy. This refers to both digital health literacy and/or health literacy
HLS	Health Literacy Survey
HLS-EU	The European Health Literacy Survey
HLS19-DIGI	The Health Literacy Survey 2019-2021. Digital health literacy
ICT	Information and Communication Technologies
ISPA	Instituto de Investigación Sanitaria del Principado de Asturias [Health Research Institute of the Principality of Asturias]
ISRAA	Istituto per Servizi di Ricovero ed Assistenza agli Anziani [Institute for Older Care and Sheltered House Services]
ITU	International Telecommunication Union
MDU	Mälardalen University
MLHSA	Ministry of Labour, Health, Social, Family Affairs and Integration of the Free and Hanseatic City of Hamburg
M&E	Monitoring and Evaluation
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
RMIT	Royal Melbourne Institute of Technology
SeAMK	Seinäjoki University of Applied Sciences
SESPA	Servicio de Salud del Principado de Asturias [Health Service of the Principality of Asturias]
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
ToC	Theory of Change
UCN	University College of Northern Denmark
WHO	World Health Organization
WP	Work package

5.4. Glossary

Include a brief definition of the terminology included in this Strategy that allows the reader to understand better the scope of it.

Autonomy
The control that each person exercises when making individual decisions, especially regarding well-being. In health and care, autonomy is the freedom of the patient to maintain control of their body before, during and after treatment.

Beneficence
The dedication to safeguard and defend the rights of others, prevent harm, assist those with disabilities, and save those who are in danger while upholding a set of ethical norms.

Best practice
Is a relevant policy or intervention implemented in a real-life setting and which has been assessed favourably in terms of adequacy (ethics and evidence) and equity as well as effectiveness and efficiency related to process and outcomes. Other criteria are important for a successful transferability of the practice such as a clear definition of the context, sustainability, cross-sectional, and participation of stakeholders.

Beyond EU
Australia, Canada, New Zealand, United Kingdom (England, Northern Ireland, Scotland, Wales), United States of America.

Champions
Professionals, services, organisations, municipalities, regions, etc. that succeeded with initiatives (best practices) in relation to (d)HL.

Citizen
A person who, by place of birth, nationality of one or both parents, or naturalization is granted full rights and responsibilities as a member of a nation or political community.

Co-creation
Form of collaborative creativity initiated in the private sector that has then been applied to the public environment to help the design and delivery of public services, policies, and products, including for the health care. This collaborative approach entails a change of perspective on the role of citizens, not only as recipients of care, but also as partners and innovators.

Digital Health Literacy (dHL)
The ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem.

eHealth
The use of ICT in health products, services and processes combined with organisational change in healthcare systems and new skills, in order to improve citizens' health, efficiency and productivity.

European Union
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Health Care/Healthcare
All organisations, people, and actions within a health system whose primary objective is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities. A health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services. It includes, for example, a mother caring for a sick child at home; private providers; behaviour change programmes; vector-control campaigns; health insurance organisations; occupational health and safety legislation. It includes cross-sectoral action by health staff, for example, encouraging the ministry of education to promote female education, a well-known determinant of better health.

Health Data
Any data "related to health conditions, reproductive outcomes, causes of death, and quality of life" for an individual or population. This includes clinical metrics along with environmental, socioeconomic, and behavioural information pertinent to health and wellness. A plurality of health data is collected and used when individuals interact with health care systems. This data, collected by health care providers, typically includes a record of services received, conditions of those services, and clinical outcomes or information concerning those services.

Health Literacy (HL)
The ability (knowledge and competences) of people to access, understand, appraise, and apply health information to make judgments and decisions

in everyday life concerning healthcare, disease prevention and health promotion.

HL and/or digital HL levels
The level of HL or digital HL of individuals or groups as measured by measurement tools developed for the purpose.

Information and Communication Technologies
A diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the Internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players, and storage devices) and telephony (fixed or mobile, satellite, video-conferencing, etc.).

Intersectionality
A concept and theoretical framework that facilitate recognition of the complex ways in which social identities overlap and how they can create compounding experiences of discrimination and concurrent forms of oppression.

Justice
The fair, equitable and suitable treatment of individuals.

Monitoring and evaluation tools, methods and frameworks
Tools, methods and frameworks in (d)HL that are validated and published in peer-reviewed journals. They measure or quantify individuals' (d)HL and organisations' (d)HL environments covering different target populations and services (e.g., the HLS-EU questionnaire, the eHL Assessment toolkit (eHLA) and the eHL Questionnaire (eHLQ), the M-POHL network action or the WHO HL Road Map).

Nonmaleficence
The ethical principle of doing no harm. In healthcare, it is the duty of health care professionals to act in the patient's best interest.

Patient
A person who is receiving medical care, esp. in a hospital, or who is cared for by a particular doctor or dentist when necessary.

Privacy
The right to keep one's personal matters and relationships secret.

Private and public initiatives and services

Related to (d)HL regarding testing or assessing, monitoring, training, capability building, education, consulting, development, communication, intervention, care, support, peer support, or community action.

Social Innovation

The design and implementation of new solutions that imply conceptual, process, product, or organisational change, which ultimately aim to improve the welfare and well-being of individuals and communities. Many initiatives undertaken by the social economy and by the civil society have proven to be innovative in dealing with socio-economic and environmental problems, while contributing to economic development. To tap fully the potential of social innovation, an enabling policy framework is needed to support public, non-profit, and private actors to co-construct and implement socially innovative solutions and thereby contribute to address socio-economic issues, build stronger territorial resilience, and better respond to future shocks.

Social Services

A service that aims at promoting citizen's and client's social well-being and ability to function and prevents, reduces, and eliminates social problems.

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Portugal

- Farol Temporary Residence Centre.
- Inclusion Community Centre.
- Rainha Santa Isabel Day Care Centre.
- São Pedro Social Day Care Centre.
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- REDEX. Red Extremeña de Desarrollo Rural.
- SEPAD. Servicio Extremeño de Promoción de la Autonomía y Atención a la Dependencia.
- Servicio Canario de la Salud.
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