



Increase
Digital
Competences
to Promote Inclusion

InDiCo - Increase Digital Competences to Promote Inclusion

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Assessment and validation of digital competences at levels 1 and 2 for persons with learning difficulties at the pan-European level

Report



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1 Introduction

The European Commission's (2023) targets for the digital decade envisage that at least 80% of those aged 16-74 shall have at least basic digital skills by 2030. DigComp 2.2, the digital competence framework for citizens (Vuorikari et al., 2022), which allows the categorisation and comparability of digital skills on eight levels, plays a key role in the European Commission's digital strategy.

Although the DigComp framework includes basic digital competences at levels 1 and 2, and the digital strategy aims for 'digital skills for all', persons with learning difficulties are at risk of exclusion. In the InDiCo project we agreed on using the term 'persons with learning difficulties' instead of 'persons with intellectual disabilities' to describe persons who experience challenges in all areas of life due to intellectual difficulties.

'Learning difficulties' encompass a range of challenges with regard to learning arising from various factors which can be genetic, neurobiological, cognitive, motivational, affective, or socioeconomic factors. It includes both general learning deficits and specific disorders like reading, spelling, or arithmetic difficulties. Diagnosis and intervention must be tailored to the individual, with some factors being more modifiable than others. Terminology and policies surrounding learning difficulties vary widely across regions and educational systems. Contemporary definitions are largely descriptive, focusing on addressing the specific needs of individuals to facilitate their learning progress in all areas of life (Lenhard & Lenhard, 2013).

Often training programmes are inaccessible to them, or the adult learning and education staff who support and accompany persons with learning difficulties have low digital competences themselves. Against this backdrop, the InDiCo project aims for a clearer understanding of the competences required by persons with learning difficulties in their digital interactions, a competence-based approach for adult learning and education staff in the assessment and training of digital competences, and improved validation of digital competences in connection with the DigComp framework.

One step to reach these aims is to examine the current state of digital inclusion of persons with learning difficulties in relation to the DigComp framework, specifically in relation to proficiency levels 1 and 2. In six reports (for Austria, Germany, Greece, Portugal, and Spain, and the pan-European level) the extent to which 'digital skills for all' with regard to persons with learning difficulties has already been achieved is explored.

As an introduction to this report, DigComp is briefly explained and the central concepts of assessment and validation are introduced, followed by an explanation of the methodology.

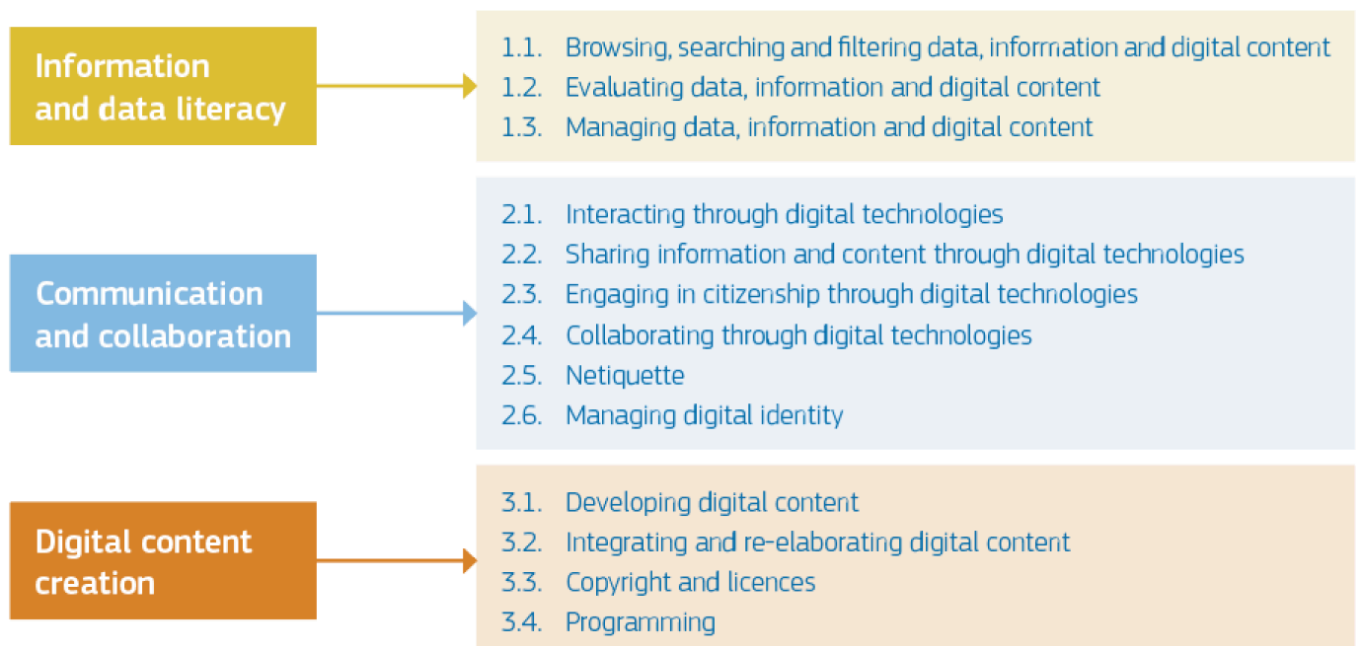
DigComp 2.2: The Digital Competence Framework for Citizens

DIGCOMP, a framework for developing and understanding digital competence in Europe, was first published in 2013 (Ferrari, 2013). Digital competence has been acknowledged as one of the

eight key competences for Lifelong Learning by the European Union. Digital competence can be broadly defined as the confident, critical and creative use of information and communication technology to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society (p. 2). The DIGCOMP framework aims to support the development of digital competence of individuals in Europe and represents an attempt to allow for self-assessment based on five areas of digital competence and three proficiency levels (p. 14) and presents a detailed framework with an in-depth description of the different aspects of 21 digital competences (pp. 15–36).

The latest version to date is DigComp 2.2, the digital competence framework for citizens (Vuorikari et al., 2022). It is an EU-wide tool to improve citizens' digital competence, help policy-makers formulate policies that support digital competence building, and plan education and training initiatives to improve the digital competence of specific target groups (p. 2). The DigComp framework provides a common language to identify and describe the key areas of digital competences – information and data literacy; communication and collaboration; digital content creation; safety; and problem solving – in terms of knowledge, skills, and attitudes (p. 3). The use of agreed vocabulary allows to consistently apply the competence-based approach to instructional planning, assessment and monitoring (p. 4) “Ultimately, it is up to the users, institutions, intermediaries or initiative developers to adapt the reference framework to their needs when tailoring interventions (e.g. curriculum development) to fit the specific needs of target groups” (p. 4).

The DigComp 2.2 encompasses five competence areas with a total of 21 competences and eight proficiency levels (p. 4):





As mentioned above, the InDiCo project puts proficiency levels 1 and 2 to the fore as these are the basic levels (“foundation”). Proficiency level 1 and level 2 are distinguished by the degree of guidance needed. The following example derives from competence area 2, which is “Communication and collaboration” and is given for competence 2.4 “Collaborating through digital technologies” (p. 21):

FOUNDATION	1	At basic level and with guidance, I can:	<ul style="list-style-type: none"> • choose simple digital tools and technologies for collaborative processes.
	2	At basic level and with autonomy and appropriate guidance where needed, I can:	<ul style="list-style-type: none"> • choose simple digital tools and technologies for collaborative processes.

In the framework, selected examples of learning outcomes in the form of knowledge, skills and attitudes are given, and selected examples of “use cases”, either from an employment scenario or a learning scenario, are presented (e.g., pp. 12–13).

Assessment and validation of learning outcomes

Validation of non-formal and informal learning (VNFIL) can be conceptualised as a powerful tool to support disadvantaged and vulnerable adults, highlighting the importance of introducing and advocating for alternative pedagogical approaches where the assessment and validation of (prior and in situ) learning is seen “as a learning process” (Andersson, 2017), rather than a policy-driven summative assessment and certification for capacity building purposes. VNFIL prioritises and places the individual at the centre of the process (Villalba-García, 2021, p. 357).

With this in mind, and in view of the project's objectives, two key concepts need to be highlighted:

- Validation means a process of confirmation by an authorised body that an individual has acquired learning outcomes measured against a relevant standard and consists of the

following four distinct phases: identification, documentation, assessment, and certification (Cedefop, 2023, p. 9).

- Assessment is normally referred to as the stage in which an individual's learning outcomes are compared against specific reference points and/or standards. It needs to be designed to capture and assess the learning specific to each individual, so various tools need to be considered. In some cases, written tests will be sufficient; in other cases, demonstrations, practical tests and evaluation of other forms of evidence will be required (p. 16).

The InDiCo project considers the DigComp framework as a relevant standard for the assessment and validation of learning outcomes. However, we also intend to include competences required by persons with learning difficulties in their digital interactions, thus prioritising the learner's voice and putting the individual at the centre. We also recognise the value of other relevant frameworks, such as the UNESCO (2021) framework for media and information literacy.

Methodology

Drawing on qualitative social research (Given, 2008) and addressing the digital inclusion of persons with learning difficulties as a social issue (Bloor, 2011), the following research questions guided the data collection and analysis process to gain an understanding of the current state of digital inclusion of persons with learning difficulties in relation to the EU DigComp framework, specifically in relation to proficiency levels 1 and 2. The findings are presented in six reports (for Austria, Germany, Greece, Portugal, Spain, and at a pan-European level).

- What is the status quo of the assessment and validation of digital competences at levels 1 and 2 of the DigComp framework for persons with learning difficulties?
- What are the challenges and gaps regarding the assessment and validation of digital competences at levels 1 and 2 of the DigComp framework for persons with learning difficulties?
- To what extent are digital competences currently assessed and validated with persons with learning difficulties?

We conducted web searches for information on relevant bottom-up initiatives for persons with learning difficulties (project websites, evaluation reports and the like) based on relevant keywords, screened the content with regard to the promotion, assessment and validation of basic digital competences, and documented these materials (Prior, 2011, p. 95).

We identified key informants (Fetterman, 2008) as possible respondents with first-hand knowledge of the assessment and validation of basic digital competences for persons with learning difficulties and asked them to share their knowledge, experiences and thoughts on digital inclusion of persons with learning difficulties (or other vulnerable or marginalised groups). Data

was collected via an online questionnaire using Google Forms and the survey data was processed anonymously.

As the data was collected mainly through narrative responses to open-ended questions, the online survey is considered a qualitative method (Julien, 2008a, p. 846).

- The first questions collected information about the respondents' professional background.
- The next questions collected information about their professional expertise: How they promote the digital competences of persons with learning difficulties (or other vulnerable or marginalised groups) to contribute to digital inclusion; what elements of their project, initiative or work are key to promoting the digital inclusion of persons with support needs; what challenges they have encountered in their project, initiative or work related to the assessment and/or validation of basic digital competences and how they have dealt with them; and finally, what further challenges do they see for the assessment and validation of basic digital skills for persons with learning difficulties (or other support needs).
- The following set of questions explored whether a standard or reference framework is being used to assess and/or validate basic digital competences in their project, initiative or work. And if so, which standard or reference framework is being used. This was followed by a question on whether they were familiar with DigComp, the European digital competence framework, and if so, what is the relevance of DigComp in their project, initiative or work. This was followed by a question on whether they use a national standard or reference framework for digital competences and if so, they were asked to provide the name of this national standard or reference framework and its relevance to their project, initiative or work.
- The last two questions explored respondents' expertise by asking what they thought was the potential of assessing and validating basic digital competences for persons with learning difficulties (or other support needs). And what they think could be helpful to further promote the assessment and validation of basic digital skills for people with learning difficulties (or other support needs).

In order to provide answers to the research questions, we analysed the responses using the qualitative method of content analysis (Julien, 2008b). The respondents' knowledge, experiences and thoughts are presented in this report to shed light on the status quo of the assessment and validation processes of basic digital competences with regard to persons with learning difficulties.

2 Background of the respondents

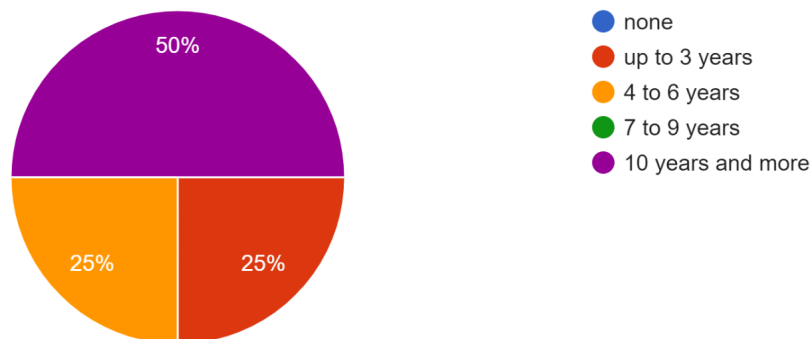
EPR shared the questionnaire among the 34 members of its Digital Skills Working Group, who are associated partners in the project, and among other 8 external contacts with first-hand knowledge of the training and/or assessment and validation of basic digital competences. Four key informants responded to the online survey.

Years of professional experience of the respondents in the field of education, training, qualification, skills development (adult education/non-formal learning)

The chart below shows that two respondents have 10 years or more of professional experience in the field of education, training, qualification, skills development (adult education/non-formal learning). One respondent had up to 3 years of experience. One respondent had 4 to 6 years of experience.

How many years of professional experience do you have in the field of education, training, qualification, skills development (adult education/non-formal learning)?

4 responses

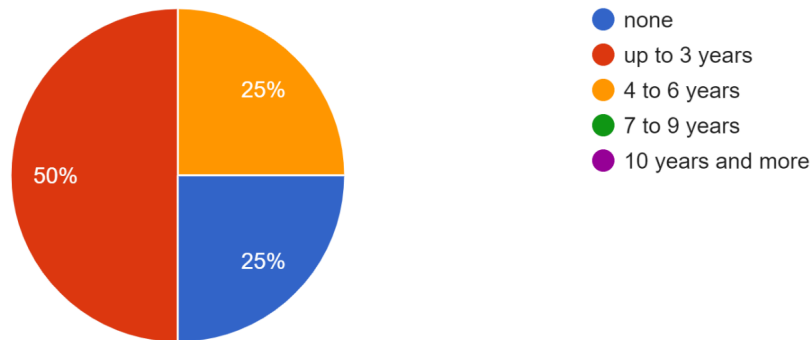


Years of professional experience of the respondents in assessing and/or validating basic digital competences

The chart below shows that, except one respondent, all the other respondents had professional experience in assessing and/or validating digital competences. Specifically, two respondents had up to 3 years of experience; one respondent had 4 to 6 years of experience.

How many years of professional experience do you have in assessing and/or validating basic digital competences?

4 responses

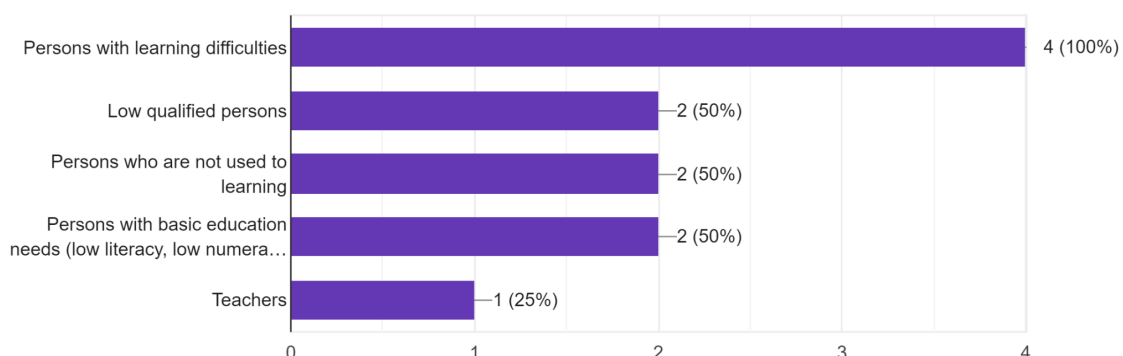


Target group(s) that the respondents mainly work with (multiple answers were possible)

- Persons with learning difficulties: this is the main target group selected by all respondents.
- Teachers: this is the target of one respondent
- Low qualified persons: two respondents work with this target group
- Persons not used to learning: two respondents work with this target group
- Persons with basic education needs (low literacy, low numeracy): two respondents work with this target group

Which target group(s) do you mainly work for? (Multiple answers are possible)

4 responses



3 Status quo of the assessment and validation of digital competences at levels 1 and 2 with regard to persons with learning difficulties

The assessment and validation of digital competences for persons with learning difficulties at levels 1 and 2 on a pan-European scale may vary depending on the country and the specific initiatives in place, as evidenced by the findings of the online questionnaire, the screening research and the interviews of the key informants. Nevertheless, there have been endeavours across Europe to develop standardised frameworks and instruments for the assessment and validation of digital competencies, including those tailored for individuals with disabilities. The following examples illustrate this point.

The Digital Skills and Jobs Platform is the sole repository of a self-assessment tool for digital skills in all EU languages. This instrument enables users to evaluate their knowledge and competencies required for the utilisation of digital technologies. The tool then offers personalised learning paths and recommends available resources to enhance digital skills based on the assessment results. Although the test is adapted to different professional and educational backgrounds, it is not particularly accessible to persons with disabilities (European Union, 2021).

A more targeted initiative addressing digital inclusion of low-skilled individuals with vulnerable backgrounds is the Skillfy platform. Developed and actively promoted across Europe by the DigiCo network, the platform is designed to facilitate the acquisition of digital skills among those who may be less likely to engage with digital technologies. The platform is designed for use by organisations operating in the field and serves as a tool for the assessment of digital skills. It also recommends further training and matches job opportunities. The Skillfy platform facilitates the understanding of learners' levels of digital skills by ensuring accessibility for learners of all backgrounds and abilities. The tests are designed to be easily comprehensible, employing straightforward language and motivating prompts to enhance the confidence and willingness of end users to engage with them. The platform enables learners to take control of their learning journey and provides them with support in a holistic manner, with an upskilling approach that is tailored to the demands of the contemporary job market. The platform offers tests for digital skills across 21 competencies and five areas, in accordance with the Digital Competences Framework for Citizens. Additionally, the platform provides recommendations for training based on users' strengths and weaknesses, as well as the ability to analyse and report on students' digital skills (DigiCo, n.d.).

Another online self-assessment tool that seeks to be user-friendly and inclusive, is 'MyDigiSkills', developed under a Creative Commons Licence by ALL DIGITAL from the DigCompSAT project of the Joint Research Council of the European Commission. Available in 11 languages (English, Dutch, French, German, Italian, Latvian, Lithuanian, Romanian, Spanish, Ukrainian and Russian), it wants to help citizens to better understand the level of their digital skills based on knowledge, skills and attitude in each of the five areas of the DigComp. Upon completion, the MyDigiSkills tool generates a comprehensive report on the user's digital competence level. This process typically takes approximately 20 minutes to finish. The aim is to raise awareness on the

digital skills gaps and motivate people to undertake educational training (ALL DIGITAL AISBL, 2021).

In terms of validation tools for digital competencies, the European Union is dedicated to establishing a standardised certification, based primarily on DigComp, as the key reference point for validation tools concerning digital competencies. The **Digital Education Action Plan (2021-2027)**, published in September 2020 by the European Commission, proposes as Action 9 the development of a **European Digital Skills Certificate (EDSC)** that can be quickly and easily recognised by governments, employers, employers, training providers and other actors across Europe. The Joint Research Centre (JRC) of the European Commission carried out the **EDSC Feasibility Study** through the systematic consultation of stakeholders. Once the pilot phases will be concluded, the development of the EDSC will rely on the DigComp framework, which undergoes ongoing updates to enable citizens to record the digital skills they have gained in today's rapidly evolving digital landscape (European Commission, Directorate - General for Joint Research Centre, n.d.).

In addition, our key informants highlighted an existing scheme that hold European recognition and are aligned with the EU DigComp framework:

- Pix is an innovative online platform developed in France, that offers a comprehensive approach to assessing, enhancing, and certifying digital skills for individuals of all proficiency levels. Distinguishing itself by tailoring assessments to the specific needs of users, Pix ensures a personalised evaluation experience from basic to expert levels. Beyond conventional multiple-choice quizzes, Pix immerses users in engaging challenges and lifelike scenarios, fostering practical skill development in handling files, navigating the web, and problem-solving. Notably, this certification, aligned with the DigComp framework, holds recognition not only in France but across Europe. In France, this certification is mandatory in all schools for 15-18 years old students and is used in labour market contexts. Furthermore, Pix's influence extends to other French-speaking regions and Catalunya, reflecting its broader impact and adoption beyond national borders.

Find out more here: <https://pix.org/en/>

Moreover, the alignment of these initiatives with the European Digital Competence Framework, DigComp, demonstrates the effort in Europe to adhere to international standards in digital skills development.

However, the key informants stated that, despite the overarching aim of many initiatives to promote digital inclusion and mitigate the digital divide, it remains challenging to pinpoint those specifically designed for persons with learning difficulties. Creating a comprehensive map detailing existing assessment and validation tools across Europe specifically tailored for marginalised groups would be beneficial. Such an initiative would not only address the current gap in tailored support but also foster greater accessibility and equity in digital skills development across diverse populations.

The survey findings indicate that difficulties persist in the assessment and validation of digital competencies for persons with learning difficulties. Three out of four respondents indicated that they did not utilise a standard or reference framework to assess and/or validate basic digital competences in their projects, initiatives, or work. A single respondent indicated that they had utilised the DigComp framework as a reference point.

The respondents to our survey indicated that there is a lack of awareness of the EU DigComp strategy in many European countries. Moreover, the implementation of the strategy at the local level necessitates a certain degree of time and adaptation to the specific contexts. Nevertheless, despite these challenges, all respondents are familiar with the EU DigComp. Nevertheless, two respondents indicated that they do not utilise the framework in their professional work, despite being aware of it. In particular, one respondent indicated that this framework is not suitable for learners with special needs, primarily because it places an undue emphasis on self-esteem, rather than addressing specific tasks. Another respondent indicated that the framework is pertinent to their work, particularly in terms of the theoretical foundation underlying the majority of training materials developed within projects.

The potential of assessing and validating basic digital competences for persons with learning difficulties or those requiring additional support is an area that offers considerable promise in terms of empowerment and inclusion. Three respondents, drawing on their expertise and experience, argue for the assessment and validation of basic digital competencies for persons with learning difficulties or those requiring additional support, highlighting its considerable potential. The respondents have identified a number of areas for further investigation, including:

- Serving as a foundation for offering effective learning opportunities to the target demographic.
- Enhancing motivation among the target group to engage in skill development.
- Proposing the introduction of digital skills training for all learners at the outset of their educational journey as an excellent method to ensure universal benefits from technology-enhanced learning.

4 Challenges and gaps regarding the assessment and validation of digital competences at levels 1 and 2 with regard to persons with learning difficulties

All respondents identified a series of challenges pertaining to the assessment and validation of digital skills competencies at levels 1 and 2 in relation to persons with learning difficulties.

One respondent indicated that they had developed their own digital competence test to track their progress over time. However, the current system lacks the capacity for automated data analysis, indicating scope for improvement in this regard. Furthermore, the respondent notes that students with special needs often encounter difficulties independently reading, understanding, and initiating work on assignments. Such students require the assistance of a tutor or teacher. However, the teacher instructing the student may inadvertently provide part of the answer, thereby preventing an accurate assessment of the student's digital skills.

Another respondent disclosed that they do not employ a systematic and validated approach based on the 'level' model, which is commonly used in language support. In contrast, a variety of ICT-related vocabulary is employed. The creation of a unified system for official assessment, coupled with an open badges approach, presents a number of challenges.

A third respondent indicated that the primary challenge encountered has been related to the scaling up and exploitation phases of projects. Furthermore, there is often a lack of coherence and consistency among different systems. The harmonisation of the current systems represents a significant challenge.

The final respondent posited that the "lack of time and digital confidence for instructors" presents a challenge in the prioritisation of digital skills instruction. Furthermore, the implementation of enhanced security measures, such as multi-factor authentication, which may require the use of multiple devices to access digital applications, may present a challenge to the adoption of technology by certain individuals.

5 Extent of the assessment and validation of digital competences at levels 1 and 2 with regard to persons with learning difficulties

Based on the results of the online survey and the screening, the extent of the assessment and validation of digital competences at levels 1 and 2 concerning persons with learning difficulties varies. While there are efforts to assess and validate digital skills in relation to this specific target group, challenges persist. Despite the familiarity with the DigComp framework, its application to support persons with learning difficulties remains limited. Moving forward, there's a need for a more nuanced approach that prioritises the unique needs and experiences of persons with learning difficulties to ensure their meaningful participation in the digital society.

Promoting the digital competences of persons with learning difficulties (or other vulnerable or marginalised groups) to contribute to digital inclusion

All the respondents use different strategies to promote the digital inclusion of persons with learning difficulties or other vulnerable or marginalised groups:

- Teaching young people with special needs digital skills in a computer class.
- Face to face job mediation/guidance contacts.
- Engage any group of learners and ensure that their digital inclusion is relevant to their needs and interests.
- Erasmus+ projects development and similar initiatives

Key elements for digital inclusion in the respondents' project, initiative or work

Respondents identified the following elements as key to promote the digital inclusion of persons with support needs in their projects, initiatives, or work:

- Promoting the use of digital tools for clients (such as Mijn Loopbaan) in job mediations and providing specific training to build the capacity of clients to use them.
- Providing step-by-step guidelines for instructors on how to use technology with learners.
- Accessibility and targeting.

6 Conclusions

The InDiCo project, which aimed to enhance the digital inclusion of people with learning disabilities, has provided valuable insights into the current landscape of digital competence assessment and validation, particularly in relation to proficiency levels 1 and 2 of the DigComp framework.

The findings emphasise the necessity for a bespoke approach to assessment and validation, one that prioritises the individual learner's needs and experiences. While the DigComp framework provides a valuable reference point, there is a need for frameworks and methodologies that specifically address the unique requirements of persons with learning difficulties, ensuring their meaningful participation in the digital society.

The lack of standardised assessment tools that consider the specific needs of persons with learning difficulties and the necessity for more accessible and user-friendly validation processes are two key challenges identified. Furthermore, the discrepancy in digital confidence among educators highlights the necessity of targeted training initiatives to equip them with the requisite skills to support persons with learning difficulties effectively.

In order to advance digital inclusion efforts, it is essential that stakeholders, including policymakers, educators, and persons with learning difficulties themselves, collaborate. By prioritising accessibility, targeting, and individualised support, we can strive towards a more inclusive digital society where all individuals, regardless of their background or abilities, can fully participate and thrive.

7 References

- ALL DIGITAL AISBL, 2021. <https://mydigiskills.eu/>
- Andersson, P. (2017). Validation as a learning process. In R. Duvekot, D. Coughlan, & K. Aagaard (Eds.), *The learner at the centre: Validation of prior learning strengthens lifelong learning for all* (pp. 121–127). European Centre Valuation of Prior Learning/VIA University College.
- Bloor, M. (2011). Addressing social problems through qualitative research. In D. Silverman (Ed.), *Qualitative research: Issues of theory, method and practice* (3. ed., pp. 399–415). SAGE.
- CEDEFOP. (2023). *European guidelines for validating non-formal and informal learning* (3rd ed.). Publications Office of the European Union. <https://doi.org/10.2801/389827>
- DigiCo (n.d.). Skillify platform. <https://digico.global/skillify-landing/>
- European Commission, Directorate. General for Joint Research Centre (n.d.). <https://edsc-consultation.eu/>
- European Commission. Directorate General for Communications Networks, Content and Technology (2023). *2030 Digital Decade: Report on the state of the Digital Decade 2023*. Publications Office of the European Union. <https://doi.org/10.2759/318547>
- European Union (2021). <https://digital-skills-jobs.europa.eu/en/digital-skills-assessment>
- Ferrari, A. (2013). DIGCOMP: A framework for developing and understanding digital competence in Europe. Publications Office of the European Union. <https://doi.org/10.2788/52966>
- Fetterman, D. M. (2008). Key informant. In L. M. Given (Ed.), *The Sage encyclopedia of qualitative research methods* (p. 477). SAGE.
- Given, L. M. (Ed.). (2008). *The Sage encyclopedia of qualitative research methods*. SAGE.
- Julien, H. (2008a). Survey research. In L. M. Given (Ed.), *The Sage encyclopedia of qualitative research methods* (pp. 846–848). SAGE.
- Julien, H. (2008b). Content analysis. In L. M. Given (Ed.), *The Sage encyclopedia of qualitative research methods* (pp. 120–122). SAGE.
- Lenhard, W., & Lenhard, A. (2013). Learning difficulties. In *Oxford Bibliographies Online Datasets*. <https://doi.org/10.1093/obo/9780199756810-0115>
- Pix. (n. d.) Develop your digital skills. <https://pix.org/en/>
- Prior, L. (2011). Using documents in social research. In D. Silverman (Ed.), *Qualitative research: Issues of theory, method and practice* (3. ed., pp. 93–110). SAGE.

- UNESCO. (2021). Media and information literate citizens: think critically, click wisely! Media & information literacy curriculum for educators & learners. UNESCO.
<https://unesdoc.unesco.org/ark:/48223/pf0000377068>
- Villalba-García, E. (2021). Validation of non- formal and informal learning: The hero with a thousand faces? European Journal of Education, 56(3), 351–364.
<https://doi.org/10.1111/ejed.12468>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). DigComp 2.2 – The Digital Competence framework for citizens: With new examples of knowledge, skills and attitudes. Publications Office of the European Union. <https://doi.org/10.2760/115376>