



Digital inclusion

Intellectual Disability People

Companies Advice Report

PROJECT: Digital Inclusion for Intellectual Disability People

2021-2-ES01-KA210-ADU-000051007



Co-funded by
the European Union

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



INDEX

<i>Introduction</i>	3
<i>Background</i>	4
<i>Experience of the implementation of the methodology to improve the digital inclusion of people with intellectual disabilities</i>	8
<i>Possible improvements for the development of digital applications or processes for persons with disabilities</i>	10
<i>Concrete Examples of Technology Enhancements</i>	11
<i>Case Study Analysis</i>	13
<i>User Feedback</i>	14
<i>Further advice</i>	16
<i>Conclusions</i>	19





Introduction

Digital inclusion refers to efforts to ensure that all people, regardless of their abilities or disabilities, have access to and can effectively use digital technologies. In today's digital age, where technology is advancing rapidly and is integrated into almost every aspect of daily life, it is critical that people with intellectual disabilities are not left behind. This group faces significant barriers in accessing and using technology, including lack of accessibility on digital platforms, lack of specific training and limited ongoing technical support.

The project 'Digital Inclusion for People with Intellectual Disabilities', funded by the European Commission through the Erasmus+ Programme, has aimed to develop methodologies and tools that enable organisations to promote the use of technology and digital devices among people with intellectual disabilities. This project has aimed to contribute to the improvement of the quality of life of this group, facilitating their communication, education and entertainment. By providing access to technology, they are offered an opportunity to develop essential skills in modern society.

This initiative has involved an international consortium, which has made it possible to carry out a project of greater scope and quality. It involved entities dedicated to research and care for people with disabilities from Portugal, Cyprus and Spain. Having counted on the coordination of the VALE Association during the whole project and as an applicant of the project.

The importance of this project lies in its ability to transform the lives of people with intellectual disabilities. Digital technologies not only improve their ability to communicate and learn, but also offer new forms of entertainment and socialisation. However, for these improvements to be effective, it is crucial to understand the attitudes and habits of the target group, their families and the people who work with





them on a daily basis. This is reflected in the research carried out by the project consortium.

Globally, the digital divide disproportionately affects people with intellectual disabilities. While technology has the potential to be a great equaliser, without appropriate intervention, it can also perpetuate and widen existing inequalities. Lack of access to appropriate devices, insufficient basic digital skills and lack of accessible content are some of the barriers that must be overcome to achieve true digital inclusion.

The ‘Digital Inclusion for People with Intellectual Disabilities’ project has been developed in recognition of these challenges. It is based on the premise that to effectively integrate people with intellectual disabilities into the digital age, a social-scientific approach encompassing skills development, technological accessibility and awareness raising in society at large is necessary.

This report aims to provide a concrete vision of the needs detected in this group that can be implemented by technology or software development companies such as yours. In addition, it presents the findings and challenges detected throughout the project. It also aims to provide practical and feasible recommendations that can be adopted by companies and organisations to improve accessibility and e-inclusion.

Background

The digital inclusion of people with intellectual disabilities is an issue of great relevance in today's society, where technology plays a central role in almost all aspects of everyday life. The transition to a digital society has brought with it many opportunities, but it has also brought new challenges, especially for those who face significant barriers in accessing and using technology. Understanding the background





to this issue is crucial to effectively address the solutions needed to foster full digital inclusion.

The digital divide refers to inequalities in access, use and benefits gained from digital technologies. This phenomenon disproportionately affects people with intellectual disabilities, who often face multiple barriers to participation in the digital society. These barriers include a lack of accessible devices, insufficient basic digital skills and a lack of content and applications adapted to their specific needs.

According to recent studies, people with intellectual disabilities are less likely to have access to the internet and digital devices compared to the general population. This lack of access significantly limits their opportunities for education, employment, communication and entertainment. Moreover, the COVID-19 pandemic has exacerbated these inequalities, further highlighting the urgent need to address digital inclusion as a priority.

Digital inclusion is a fundamental right that enables all people to participate fully in society. For people with intellectual disabilities, digital inclusion not only facilitates communication and access to information, but also empowers individuals, improving their quality of life and promoting their autonomy. Technology can be a powerful tool for overcoming barriers, offering new ways of learning, social interaction and participation in the community.

Access to adapted technologies can transform the lives of people with intellectual disabilities, providing them with the tools they need to develop their abilities and reach their full potential. For example, augmentative and alternative communication (AAC) applications can help people with communication difficulties to express themselves more effectively, while online learning platforms can offer educational opportunities tailored to their specific needs.





Globally, a number of organisations and governments have recognised the importance of digital inclusion and have implemented initiatives to address this challenge. The UN Convention on the Rights of Persons with Disabilities (CRPD) highlights the right of persons with disabilities to access technology and information. This international framework has prompted many countries to develop policies and programmes aimed at improving digital accessibility.

In Europe, the European Disability Strategy 2010-2020 has been a key framework for promoting equality and inclusion of persons with disabilities. This strategy includes specific measures to improve access to information and communication technologies (ICT) and encourage active participation in the digital society. Countries such as Spain, Portugal and Cyprus have implemented national programmes in line with these objectives, developing pilot projects and providing funding for eInclusion initiatives. The Strategy for Inclusion and Diversity of the Erasmus+ Programme, until 2027, has contributed significantly to the development of initiatives such as this project and has been able to improve the situation of vulnerable groups and those with fewer opportunities.

The background to inclusion for people with intellectual disabilities underlines the urgent need to address existing barriers and promote equal access to technology. Through global initiatives, public policies and innovative projects, significant progress has been made, but much remains to be done. Digital inclusion is not only a fundamental right, but also a crucial tool to improve the quality of life and promote the autonomy of people with intellectual disabilities. By continuing to develop and support inclusive initiatives, we can move towards a fairer and more equitable society, where everyone has the opportunity to participate fully in the digital age.

In order to contextualize this report of recommendations for companies in the technology sector, the phases of the project should be mentioned:





- **Research:** Social research was conducted, using the methods and tools of the social sciences. It also included surveys of families, users and workers. This allowed us to find out what were the main barriers of people with disabilities regarding the use of new technologies.
- **Methodology development:** With the data collected in the research phase, a methodology was developed to address all these difficulties and improve the situation of people with disabilities. Practical exercises were included, with examples, as well as good practices and examples of people with disabilities who had self-improved. So that the young people could have a point of reference.
- **Training and self-employment phase:** This part of the project consisted in the implementation of the methodology, in which the centres in Portugal and Spain carried out a training phase with more than 40 people with intellectual disabilities. They carried out training sessions on the activities and good practices contained in the methodology. Once the training was completed, an autonomous work phase was carried out where the users put into practice the knowledge acquired in the training. An observation of the whole process was carried out, resulting in a report highlighting the strengths and adaptations made to the methodology.
- **Report for technology companies:** From the needs and experience of the implementation of the methodology, recommendations and necessary adaptations in some applications or software were obtained. These are included in this document and are intended to be improved by private entities working in the technology sector, in order to make their products more inclusive.





Experience of the implementation of the methodology to improve the digital inclusion of people with intellectual disabilities

On a general level, it can be said that the implementation of the project has been a success and has represented a great opportunity for the consortium that has carried it out. It has contributed in a very important way to the development of digital competences in people with intellectual disabilities. Despite the success, some challenges have been faced in the implementation of the methodology:

- **Access to Appropriate Devices:** The availability of accessible and affordable devices remains a significant barrier. Many people with intellectual disabilities do not have access to the technologies needed to fully participate in the digital society. It is crucial that public policies and subsidy programmes are implemented to facilitate access to these devices.
- **Ongoing support:** Technical support and ongoing assistance are crucial to ensure that users can effectively use available technologies. However, many programmes lack the resources to provide this level of support. It is essential that organisations work together to provide robust and sustainable support networks.
- **Awareness and Awareness Raising:** Raising awareness and awareness of the importance of digital inclusion is critical. Technology companies, software developers and society in general need to recognise and address the specific needs of people with intellectual disabilities. Awareness campaigns and educational programmes can play a key role in this process.

Throughout the implementation of the eInclusion methodology, several valuable lessons have been learned and good practices have been identified that can serve as a guide for future projects:





- **Co-Creation and Active Participation:** Involving people with intellectual disabilities in the design and development of technologies ensures that the final products are accessible and useful. Co-creation and active participation are essential to develop solutions that truly meet the needs of users. This approach not only improves the quality of the technologies developed, but also empowers users and fosters a sense of ownership and engagement.
- **Adaptation and Customisation:** Technologies must be adaptable and customisable to cater to the diverse needs and capabilities of users. Customisation of interfaces and functionalities can significantly improve the usability and effectiveness of digital tools. This includes the ability to adjust settings such as text size, colours and speed of response.
- **Ongoing Training and Technical Support:** Providing ongoing training and technical support is crucial to ensure that users can effectively use the available technologies. Programmes should include ongoing training components and access to technical assistance. This ensures that users can keep up with technology updates and resolve any problems they may face.
- **Collaboration and Partnerships:** Collaboration between governments, non-governmental organisations, technology companies and the community is critical to creating an inclusive digital ecosystem. Strategic partnerships can maximise the impact of projects and ensure that resources are used effectively. These collaborations can include sharing best practices, co-funding initiatives and creating support networks for users.

The implementation of the eInclusion methodology for people with intellectual disabilities has proven to be a powerful tool to improve the quality of life and promote the autonomy of this group. Through innovative projects and strategic partnerships, significant progress has been made in several countries. However, there are still





challenges to overcome and opportunities for improvement. It is essential to continue to develop and support inclusive initiatives, ensuring that all people have the opportunity to participate fully in the digital age.

Experience in implementing this methodology provides a solid basis for future action. By learning from past successes and challenges, we can move towards a more inclusive and equitable society, where people with intellectual disabilities can fully enjoy the benefits of digital technology. Continued investment in training, the development of accessible technologies and the creation of a robust support environment are essential to achieve this goal.

Possible improvements for the development of digital applications or processes for persons with disabilities

The development of digital applications and processes designed for persons with intellectual disabilities requires a comprehensive and well thought-out approach, focusing on accessibility, usability and customization to meet their specific needs.

The following details specific recommendations for businesses and organizations, includes concrete examples of technology improvements, discusses successful case studies and incorporates feedback from users who have experienced significant improvements through these applications.

- **Adopting universal design principles:** Companies should adopt universal design principles from the beginning of the development process. This means creating applications that are accessible and usable by as many people as possible, without the need for additional adaptations. For example, using simple navigation, large and clearly labelled buttons, and customisation options in terms of text size, colours and contrast. In addition, it is crucial that these





applications consider different skill levels and provide interactive tutorials that guide users through each step of the process.

- **Integration of assistive technologies:** Applications must support assistive technologies such as screen readers, voice recognition software and alternative input devices. This is crucial to ensure that people with intellectual disabilities can interact with technology effectively. Companies should also ensure that their applications work well with assistive devices such as special keyboards and adaptive mice.
- **Usability testing with end users:** It is essential that companies conduct usability testing with people with intellectual disabilities during the development process. This helps to identify and resolve accessibility and usability issues prior to product launch. In addition, getting direct feedback from users ensures that applications are truly useful and adapted to their needs. These tests should be iterative, allowing for continuous adjustments based on users' experiences and suggestions.
- **Continuous updating and maintenance:** Applications should be updated regularly to incorporate new features and improve accessibility. It is also important to maintain efficient technical support to resolve any problems users may face. This includes the creation of accessible helpdesks offering phone, chat and email support, as well as the provision of remote assistance options to troubleshoot problems directly on the user's device.

Concrete Examples of Technology Enhancements

In this section we wanted to dedicate a section to examples of applications or technologies adapted to people with intellectual disabilities. These can serve as an





example or reference for entities such as yours that are in charge of developing technological material.

- **Augmentative and Alternative Communication (AAC) applications:** AAC applications, such as Proloquo2Go and Avaz, have revolutionised the way people with intellectual and communication disabilities interact with others. These apps use pictograms and text-to-speech to help users communicate effectively. For example, Proloquo2Go allows users to create sentences by selecting pictures and words, which are then converted into synthetic speech to facilitate communication. These applications not only improve communication, but also increase users' independence and confidence, allowing them to express their thoughts and needs more clearly and effectively.
- **Adaptive Learning Software:** Platforms such as DreamBox and Khan Academy offer adaptive learning that adjusts to the individual needs of each learner. These platforms use algorithms to adapt educational content and activities to the user's abilities and progress. This is particularly useful for students with intellectual disabilities, as it allows them to learn at their own pace and according to their specific needs. For example, DreamBox automatically adapts maths problems according to the student's skill level, providing additional explanations and exercises when necessary to reinforce learning.
- **Interactive Educational Games:** Educational games such as ABCmouse and Teach Your Monster to Read are designed to make learning fun and engaging. These games use colourful graphics, animated characters and interactive activities to teach basic reading, writing and maths skills. The playful nature of these games can be especially effective in capturing the attention of students with intellectual disabilities and keeping them motivated. In addition, these





games often include reward systems and positive feedback that reinforce learning and encourage perseverance.

- **Independent Living Apps:** Apps such as AbleLink Smart Living Suite are designed to help people with intellectual disabilities live more independently. These apps provide visual and auditory reminders for daily tasks, step-by-step instructions for activities such as cooking and cleaning, and tools to manage schedules and appointments. For example, the application can display a sequence of images that guide the user through the steps needed to prepare a simple meal, reducing the need for constant supervision and increasing the user's independence.

Case Study Analysis

We also provide some case studies that have been considered relevant in order to have some references and not only of specific applications or advice.

- **‘Explor’House’ project in Portugal:** The ‘Explor’House’ project implemented by the Resource Centre for Digital Inclusion (CRID) in Portugal is an outstanding example of how technology can improve the cognitive skills and autonomy of people with intellectual disabilities. The application uses a virtual environment of a house where users can practice daily activities and develop practical skills. The results showed significant improvements in participants' digital competences and spatial awareness, highlighting the effectiveness of assistive technologies when implemented appropriately. In addition, the project has boosted users' confidence and self-esteem by enabling them to acquire new skills and apply them in their daily lives.





- **Plena Inclusión España:** Plena Inclusión España's 'Digital Transformation for Inclusion' project focuses on extending the use of technology among young people with intellectual disabilities to improve their job prospects and social integration. The project includes basic learning sessions and the use of office software such as Word and Excel. Participants showed significant improvements in their digital skills and confidence to use technological tools, making them better prepared for the labour market. This focus on digital literacy is crucial for their inclusion in the labour market and society at large. In addition, the project has helped to raise awareness among companies about the importance of inclusion and diversity in the workplace, promoting a more inclusive and accessible working environment.
- **Association of Paralytics of France:** Since 1995, the Association of Paralytics of France has implemented training workshops and provided technical aids for communication. These programmes have significantly improved the autonomy and social integration of users, enabling them to develop greater independence and participation in the digital society. The partnership has demonstrated that with the right support and the right tools, people with intellectual disabilities can overcome significant barriers and take advantage of the opportunities offered by technology. Interactive, hands-on training workshops have been particularly effective in teaching digital skills, and technical aids have enabled users to communicate more effectively and participate actively in their communities.

User Feedback

We cannot ignore the views of people who have used one of these applications. It is necessary to mention that some of these opinions are external to the project activities.





- **Proloquo2Go User Feedback:** Proloquo2Go users have reported significant improvements in their ability to communicate with their families and friends. One parent commented: ‘Proloquo2Go has been life changing for our son. He can now express his needs and wants in a way we can all understand, which has reduced his frustration and improved our family communication’. This type of feedback highlights the positive impact that augmentative communication applications can have on the daily lives of people with intellectual disabilities and their families.
- **Testimonials from Students Using DreamBox:** Students using DreamBox have mentioned that the platform helps them better understand difficult mathematical concepts thanks to its adaptive approach. One student commented: ‘DreamBox makes learning maths fun. I like how it changes the problems based on what I need to practice more, and helps me improve my skills.’ The platform's ability to tailor content to individual student needs has proven effective in improving understanding and performance in mathematics.
- **Feedback on AbleLink Smart Living Suite:** AbleLink Smart Living Suite users have reported that the application has helped them to better manage their daily tasks and live more independently. One user mentioned: ‘AbleLink’s visual and audio reminders help me remember my appointments and daily tasks. I feel like I have more control over my life and can do more things on my own’. This type of feedback underscores the importance of independent living applications in increasing the autonomy and confidence of people with intellectual disabilities.
- **Teacher Evaluations of ABCmouse:** Teachers using ABCmouse in their classrooms have observed that students with intellectual disabilities show greater interest and motivation to learn. One teacher commented: ‘ABCMouse has transformed the way we teach. The students are more engaged and enjoy





learning with the interactive games and activities.’ The interactive and playful nature of ABCmouse has proven to be effective in maintaining student interest and motivation, facilitating deeper and more meaningful learning.

In conclusion, improving the development of digital applications and processes for people with intellectual disabilities requires a holistic approach that encompasses inclusive design, personalisation, multimodal support, ongoing training and appropriate public policies. Case studies and user feedback demonstrate that when implemented correctly, these improvements can have a significant and positive impact on the lives of people with intellectual disabilities. Collaboration between developers, educators, public policy and the disability community is essential to creating a truly inclusive and accessible digital ecosystem. By focusing on these aspects, we can ensure that technology serves as a powerful tool for inclusion, empowerment and improving the quality of life for all people, regardless of their abilities.

Further advice

As with the technology companies, it has been considered appropriate to mention some measures or tips that may be useful for other organisations that work with people with intellectual disabilities or are going to do so. Since this presents a great organisational challenge, we want to contribute to the general improvement of people with intellectual disabilities. Moreover, we encourage the collaboration between organisations with different objectives but which together can contribute to the development of a real inclusion of people with intellectual disabilities.

First of all, we mention some advice for the non-profit organisations that may be interested or work at some point with people with intellectual disabilities:





- **Develop tailored training programmes:** Organisations should develop training programmes specifically tailored for people with intellectual disabilities. These programmes should include hands-on activities and concrete examples that facilitate the learning of basic and advanced digital skills. Educational materials should be designed to be understandable and engaging, using graphics, videos and interactive tutorials that encourage the active participation of learners.
- **Use of technology in support programmes:** Integrating technology into support programmes can significantly enhance the learning and autonomy of people with intellectual disabilities. For example, using interactive educational applications and digital games can make learning more engaging and effective. In addition, adaptive learning platforms that adjust content according to the user's progress can be particularly useful in personalising the learning experience.
- **Ongoing training for staff:** Support staff should receive ongoing training on the use of digital technologies and assistive tools so that they can effectively support people with intellectual disabilities. This training should include adapted teaching techniques and the use of specialised educational software. Collaboration between support staff and technology companies is also crucial to adapt technologies to the specific needs of users.
- **Collaboration with technology companies:** Organisations should collaborate with technology companies to provide feedback and suggestions on how to improve educational and support applications. This collaboration can lead to the creation of more effective tools tailored to users' needs. In addition, organisations can participate in usability testing, contributing their experience and expertise to improve the design and functionality of applications.





Some advice has also been developed for educational institutions or organisations using new technologies for training pathways for people with intellectual disabilities:

- **Development of inclusive curricula:** Educational institutions should develop curricula that integrate the use of accessible digital technologies, enabling students with intellectual disabilities to learn and use these tools effectively. Curricula should be flexible and adaptable, providing multiple forms of delivery and assessment to meet the diverse needs of students.
- **Implementing technology classrooms:** Creating technology classrooms equipped with accessible devices and specialised educational software can enhance learning for students with intellectual disabilities. These classrooms should be designed to be inclusive and provide a safe and accessible learning environment.
- **Mentoring and tutoring programmes:** Implementing mentoring and tutoring programmes that use digital technologies can provide additional support for students with intellectual disabilities. Mentors and tutors can use communication applications and online learning platforms to guide and support students, helping them develop digital and academic skills.
- **Continuous evaluation and feedback:** Institutions should establish mechanisms to continuously evaluate and improve their programmes and assistive technologies. This includes collecting and analysing feedback from students, parents and staff, and using this information to make continuous adjustments and improvements.





Conclusions

The digital inclusion of people with intellectual disabilities is a fundamental goal for building an equitable and just society. Throughout the various chapters of this report, we have explored the importance of ensuring that people with intellectual disabilities have full and effective access to digital technologies. As we move into an increasingly digitised era, it is imperative that all sectors of society work together to close the digital divide that disproportionately affects people with intellectual disabilities.

The implementation of the eInclusion methodology in several countries has proven to be a powerful tool to improve the quality of life of people with intellectual disabilities. Initiatives such as those developed in Portugal, Spain and Cyprus have shown that it is possible to create an accessible and inclusive digital environment when innovative and collaborative approaches are applied. The projects analysed have highlighted the importance of designing simple and customisable interfaces, providing continuous training and technical support, and encouraging the active participation of people with intellectual disabilities in the development of technologies. These experiences have generated a valuable set of good practices that can be replicated and adapted in other contexts, with the aim of scaling up the positive impact of eInclusion.

It is crucial to recognise that, despite the progress made, there are still significant challenges to be overcome. Barriers to accessing appropriate devices, lack of specific training and insufficient technical support are obstacles that prevent many people with intellectual disabilities from fully participating in the digital society. Overcoming these challenges requires continued and concerted commitment from all stakeholders, including governments, non-governmental organisations, technology companies and the wider community.





The recommendations presented in this report offer a clear path towards improving the accessibility and usability of e-tools. Adopting an inclusive design approach, which actively involves people with intellectual disabilities in the development process, is fundamental to ensuring that tools are truly useful and accessible. Personalisation of the user experience, multi-modal support and ongoing training are key elements that must be considered in the design and implementation of digital technologies. In addition, accessible and efficient technical support is essential to quickly resolve any problems users may encounter, ensuring that they can use the tools effectively and sustainably.

The role of e-inclusion policies and regulations is equally crucial. Accessibility standards need to be adopted and enforced to ensure that all electronic tools and digital services are accessible to people with intellectual disabilities. Providing incentives and support to developers who commit to creating accessible tools can encourage innovation and the development of inclusive solutions. In addition, conducting impact evaluations to ensure that policies and regulations actually benefit people with intellectual disabilities is essential to measure the effectiveness of these initiatives and make necessary adjustments.

It is equally important to encourage the active inclusion and participation of people with intellectual disabilities in technology development. Creating programmes that promote their inclusion in the technology sector can provide them with opportunities for employment and career development, increasing their economic independence and participation in society. Conducting awareness and education campaigns to sensitise society to the importance of digital inclusion can help change attitudes and promote greater acceptance and support for people with intellectual disabilities.

Ultimately, continuous improvement in the development of e-tools for people with intellectual disabilities will not only improve their quality of life, but also enrich society





as a whole. By fostering greater diversity and inclusion, we can build a more just and equitable society, where everyone has the opportunity to participate fully in the digital age. Implementing these improvements requires a collaborative and committed approach from all stakeholders. Only through collaboration between governments, non-governmental organisations, technology companies and the community of people with intellectual disabilities can we create a truly inclusive and accessible digital ecosystem.

Experience in implementing the digital inclusion methodology provides a solid foundation for future action. Learning from past successes and challenges allows us to move towards a more inclusive and equitable society. Continued investment in training, the development of accessible technologies and the creation of a robust support environment are essential to achieve this goal.

In conclusion, the digital inclusion of people with intellectual disabilities is a shared responsibility that requires the active participation of all sectors of society. By taking an inclusive and collaborative approach, we can ensure that no one is left behind in the digital age. Efforts so far have shown that change is possible and that digital technologies can be a powerful force for empowerment and inclusion. By continuing to work together and committing to digital inclusion, we can create a future where all people, regardless of their abilities, have equal opportunities to thrive in the digital society.

