**Promoting digital transformation
and social innovation in VET
for better access of deaf students
to the labour market**

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WP2: EUROPEAN MONITORING REPORT & 3D4DEAF DUAL TRAINING PACK: INTRODUCING 3D TECHNOLOGIES IN TEACHING AND LEARNING FOR A SUSTAINABLE FUTURE

A1: 3D4DEAF COMPARATIVE INDEX & PRACTICAL GUIDEBOOK

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INTRODUCTION

3D4DEAF: Promoting digital transformation and social innovation in VET for better access of deaf students to the labour market aims to promote social inclusion and improve the outreach to people with fewer opportunities focusing on people with deafness/hearing impairments aged 15-21. 'Inclusion Europe' in European Commission (EC), states that due to Covid-19, people with disabilities have been tremendously affected by numerous challenges, including discrimination in the labour market. The project is aligned with the European Union Charter of Fundamental Rights and 'The right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupational integration and participation in community life. The main objective is to develop a Training programme for VET teachers and school students with deafness or hearing impairments to upgrade their 3D, coding, digital and social entrepreneurial skills to meet the needs of the digital labour market and foster equal opportunities.

The aim of this document is to describe the state of the art in the field of digitalization and the situation of deaf people in education and in the labour market.

EDUCATION OF DEAF STUDENTS

The property of language is a unique resource of the human being. Among all living animals only humankind is endowed with full language, in both oral and signed modality, a crucial evolutionary development that gives us a full, conscious existence in the world.

However, deafness challenges the typical acquisition of language, based on a phonocentric idea of human communication. Since the beginning, educational methods for the deaf have tried to re-establish effective communication, even if the tools to achieve it have been very different over time and a whole range of different tools has been developed over the centuries.

The most heated debate has been about whether to use Sign Languages or not. As a result, the main methods for the education of the deaf can be divided precisely from this distinction.

Oral methods

Oral methods in the education of the deaf have as their main objective the restoration of orality in children with severe hearing impairment, who, due to this deficit, are not exposed to the historical-oral language of the country in which they live.

The education of the deaf began precisely with this objective, when in the Renaissance period Spanish monks attempted the education of young princes from various parts of Europe. But the golden period of the oral method was the one following the Milan Congress in 1880, when it was decided to exclude Sign Language from the education of the deaf. The belief was that Sign Language could slow down or prevent the development of orality. A method of oral teaching was developed, with the mapping of the articulation of every single phonemes of the language, through pronunciation and lipreading exercises. This huge work on language was carried out in special schools for the deaf, by specialized teachers, who had at the same time the functions that are today of two different professional figures, teachers and speech therapists.

During the twentieth century various methods tried to support orality, some also through music, such as the methods devised by Aldo Vinco Gladic (phonetic graphism), Petar Guberina or the Phonetic-Rhythmic method of Zora Drezancic.

At the end of the 1900s and in contemporary time, oral education of the deaf child was further developed with the advent of the cochlear implant. This device has revolutionized the education of the deaf, having as its objective the restoration of hearing and consequently linguistic functionality. New methods have developed to support the cochlear implant. The best known is the Auditory Verbal Therapy method, which among its requirements asks for maximum use of hearing perception and a fully consistent family involvement.

Sign Language and bilingual methods

Since ancient times we know about deaf people communicating each other using "gestures". Nowadays, in all countries where there is a Deaf community, you will find a different Sign Language and sometimes also more than one, with their own phonology, vocabulary, morphology and syntax, which usually vary significantly from the national languages.

Since the beginning of the education of the deaf at the end of eighteen century, until 1880 Sign Language was widely used in institutions for the deaf, in which even many Deaf people were working as teachers. In 1880, in Milan, an international conference was held to decide the kind of education that shall be given to deaf pupils and since then, Sign Languages were banned from teaching and repressed in many ways.

It has been only from the 50s and the 60's of the XIX century that research on Sign Language started and led the international scientific community to the rediscovery of linguistic character of visual-gestural languages used by deaf people. One the most famous researcher in this field is William Stokoe, who decided to study American Sign Language by adopting the same linguistic criteria normally used to investigate historical-oral languages, with the intent to understand whether this is a form of pantomime or a language in its own right. His pioneering work marks the beginning of the reflection of contemporary linguistics and semiotics over Sign Languages. Analyzing American Sign Language (ASL), Stokoe discovered a structure in many ways similar to that of verbal languages: as the combination of a limited number of sounds without meaning (phonemes) creates a vast number of units with meaning (words), so the combination of a limited number of minimum units (the parameters), can produce a wide number of units with meaning (the signs).

From a phonological point of view, according to the analysis given by him, a sign can be decomposed in reference to three parameters (manual signals):

1. The place where the hands are performing the sign

2. The configuration of the hands performing the sign

3. The movement in the performance of the sign.

Later than the original analysis of Willian Stokoe, at least three more other important parameter have been identified from research on Sign Languages, using the method of the recognition of the minimal pair of signs, changing for one only parameter.

4. the orientation of the palms of the hand (manual signals);

They can be defined as a set of everything that conveys meaning outside the hands (non-manual signals):

1. the facial expressions;
2. the eyes, the eyebrows;
3. the movement of the head and body;

4. the oral components – or mouthing (those vocalizations, often partial and not necessarily consistent with the verbalization of the word, which may accompany the production of a sign). Mouthing can be of two types:
   a. Images of borrowed Words: comparable to oral language, mouthed at the same time ot the articulation of sign. The lips utter the corresponding word in the language, even if it can be complete or partial and is not inflected according to gender and number. The IBW can be used to bridge a gap using mouthing when sign language is missing or in excess of local variants, in order to disambiguate the message content.
   b. Special Oral Components: it consists of oral expressions accompanying the sign, such as sounds, noises, puffs, swelling of the cheeks, buccal expressions, not always clearly connected with the oral word.

Even if mouthing is considered as a parameter, because is possible to find couple of signs in minimal pair only for the mouthing, is a matter of discussion what is their real linguistic nature, because it is also easy to define them in the framework of inter-linguistic contact phenomena.

The methods using sign language in the education is called bilingual.

Bilingualism involves exposing the deaf child to both the oral / written language of the country of birth and the local sign language, or even written form only.

Sign Language has to be seen in the framework of minority languages, and should receive legal recognition and protection everywhere.

Mixed methods

There are also mixed methods, which involve the use of both languages, oral and signed and are called bimodal. Sometimes mixed methods are also called "total communication" because they try to use any useful tool to allow effective communication to deaf children, including oral words, signs and gestures.

The bimodal method combines the use of a sign language and a spoken language, also addressed the need to make oral comprehension more efficient. With this approach, the children learn to associate the meaning of the sign to the lip-reading. Normally the grammar and the general structure of the sentence remain that of the oral language, while the vocabulary is that of the sign language, which is always performed together with lipreading and mouthing.

The final result, which makes the spoken language visible, is called differently in various countries: Italiano Segnato in Italy, Signed English in Usa and Uk, Français Signé in French speaking countries.

There is also an additional version of these spoken languages translated word by word, which allows you to view and translate words that do not exist in sign languages, such as articles and clauses, using the manual alphabet (fingerspelling). This system is called Signed Exact English, a manual communication that strives to be a very exact representation of English vocabulary and grammar. The same system is called Italiano Segnato Esatto in Italy.

Deafness in Italy

Legal framework

Legal deafness is not simply a hearing loss, and in Italy is regulated by Law number 381 of 1971. This law establish that deafness can be congenital or acquired during the developmental age, and specifically within 12 years old.

This specific age span includes the consequence of atypical language development, that means that the acquisition of spoken language must have occurred in an unnatural way, i.e. through speech therapy re-education and the use of hearing aids or cochlear implants.

Moreover, deafness requires that average hearing loss has to be equal to or greater than 75 decibel (dB) in the medium frequencies (500-1000-2000 Hertz), which means that the child can not hear the human voice at the loudness of average chatting.

In Italy there are about 60.000 deaf people, which means 1/1000 on the general population, perfectly consistent with the percentage of deaf people in most OECD countries. Moreover than 90 percent of deaf children are born to hearing parents.

The school system

Italy choose for inclusion as unique framework for education in 1977, with law n. 517, which also established the right for every student with disability to have a support teacher.

Basically, this means that in Italy special school are not allowed by law and deaf children are mainstreamed in inclusive schools.

We can find two models:

- Total inclusion: the deaf/hard of hearing child is enrolled at the school closest to home, mostly in a contest of oral education

- Inclusion in bilingual schools: the Deaf child is enrolled in an inclusive school with special project of bilingualism Italian-Italian Sign Language. Sometimes Sign Language is a subject of teaching and sign language interpreters and/or deaf teachers are available. Sometimes those bilingual schools are in the former ancient special schools for the deaf.

Deaf and hard of hearing students, by law, can request and obtain the following services:

- Support teachers: provided by the Ministry of Education, they support the whole class where a deaf student is enrolled, to design an inclusive learning environment. This professional is not specialized about deafness, but about inclusive education.

- Communication assistants: provided by local government, they support the deaf child with sign language, lipreading or any other specific linguistic support. This professional is specialized about deafness.

- Speech therapist: provided by the Public Health System, they work in cabinets in the hospital or in outpatient clinics.

THE SITUATION OF DEAF PEOPLE IN THE LABOUR MARKET

The Convention on the Rights of Persons with Disabilities, adopted by the United Nations General Assembly in December 2006, and signed by most of the EU countries establishes dedicates a whole Article, the number 27 to employment and work inclusion. This article declares "the right of persons with disabilities to work on an equal basis with others". Relatedly, the 2030 Agenda for Sustainable Development, which was adopted by all United Nations Member States in December 2015, identifies people with disabilities as one of several groups of vulnerable people who must be empowered.

The Sustainable Development Goals (SDGs) in the 2030 Agenda make an explicit reference to disability in several labour market-related targets and their associated indicators.

Career aspirations of young deaf and hard of hearing people do not differ from hearing youth. However, the obstacles that deaf and hard of hearing young must overcome to achieve their professional goals are much higher than their hearing counterparts.

There are many tools supporting young people to effectively enter the labour market. Nevertheless, most of the mainstream resources for employment hunting are not accessible for young deaf such as texts about job hunting do not meet their reading requirements; videos not subtitled or translated into sign language; and other tools and resources are inaccessible and not deaf friendly. Also, most of career counsellors, mentors, trainers, and youth workers have little or no experience with deaf and hard of hearing individuals. All the above results in the social exclusion of deaf and hard of hearing people, who face unequal opportunities, experiences, access to seeking employment, labour rights and remuneration.

At European level there is a legal framework intended to regulate the relationship between employers and employees, with specific focus about workers with disabilities. EU citizens and residents with disabilities are protected against discrimination when they work or have work-related training, especially regarding pay and working conditions, and membership in organisations of workers or employers.EU legislation also protects persons on the grounds of their sex, race, age, sexual orientation, and religion.

The employer is obliged to provide reasonable accommodation. This means that the employer must take measures to adapt the workplace to an employee with disabilities, such as providing Sign Language accessibility during mandatory in-service trainings, removing physical barriers by installing ramps, facilitating access of visually impaired employees to information technologies, or re-designing working times to accommodate the needs of workers with disabilities. Failure to provide reasonable accommodation constitutes discrimination. In particular, articles from Council Directive 2000/78/EC of 27 November 2000 is establishing a general framework for equal treatment in employment and occupation. *Article 5 - Reasonable accommodation for disabled persons* is very clear about that topic:

"In order to guarantee compliance with the principle of equal treatment in relation to persons with disabilities, reasonable accommodation shall be provided. This means that employers shall take appropriate measures, where needed in a particular case, to enable a person with a disability to have access to, participate in, or advance in employment, or to undergo training, unless such measures would impose a disproportionate burden on the employer. This burden shall not be disproportionate when it is sufficiently remedied by measures existing within the framework of the disability policy of

the Member State concerned (European Disability Forum & Council Directive 2000/78/EC of 27 November 2000)".

In Italy, there are two main laws regulating the job inclusion.

1. *Law number 104 of 1992*, which gives a very precise definition of disability and establish a general framework for the rights of people with disabilities to get a job, both in public institutions and private companies.

2. *Law number 68 of 1999*. This is a specific law for job inclusion, establishing rules for the right of people with disabilities to work and create a general framework for equal treatment in employment and occupation. The law makes mandatory for both public institution and private companies to hire a minimum percentage of workers with disabilities and special needs.

From an important EU funded research, realized under Erasmus+, an extensive survey has been done across Europe, including Italy, exploring how deaf approach the job market and the barriers they face. A total of 270 individual deaf/hard of hearing youths participated in the project by answering the survey questions provided by European Union of the Deaf Youth, and their partner organisations. 24 countries participated in total. Most of the surveyed participants identify as women, followed by men, non-binary, and those who identify as queer. The most common age range of the participants is 22 to 28 years old. 156 (60%) participants have stated that their preferred method of communication is through signed languages. The next most popular answer is that their preference is either signed or spoken languages. The educational background of the participants was predominantly deaf schools (67.3%), followed by either a hearing school using sign language or mainstream oral school, which can be with other deaf children or without (26.53%). It is important to note that some participants might have attended a deaf school at an early stage of education, and then a mainstream or hearing school at a later age, or vice versa. Most of the participants' level of studies, whether they are still studying or have finished, are primary and secondary education and a significant number has higher education. Despite the participants obtaining a high level of education, they seem not to be completely satisfied with their education and even less with job opportunities. The result of the survey clearly shows that, unfortunately, regardless of their educational background, the unemployment rate is still really high among deaf/hard of hearing young individuals. The greatest number of unemployed deaf youth are from Italy and Spain, followed by France, but in every country it is higher than the rate for non-deaf job seekers. Most deaf youth unemployed stated that they never had a previous job. Some of them have been fired, some had to quit. 63 participants who stated they are unemployed have indicated that they are actively looking for a job, and 54 participants are being passive about their unemployed status. The most common reasons given for being unemployed are:

• They are still studying.
• They do not have any job experience
• They do not have a network at their disposal in order to find a job
• They do not receive enough support from their government

Also, interestingly, deaf and hard of hearing youth participants in the survey stated a different variety of challenges: lack of government support; limited job opportunities; language barriers. Most of the unemployed participants seem dissatisfied regarding their employed status. Many deaf youths indicated that they found their jobs through their own non -formal networks and also the internet is another popular tool used to find jobs. They mainly have hearing co-workers or a mixture of hearing

and deaf colleagues and their hearing colleagues normally are not able to sign. They claim that they face accessibility barriers at their workplace when compared to their hearing peers. Moreover, the vast majority of young deaf job seekers indicated that they face more barriers finding jobs than their hearing peers in their respective countries. A few of them said that they experienced audism and/or discrimination, accessibility issues, not knowing how to search for a job, lack of training, finding it difficult to approach employers to apply for job positions, or lack of professional services.

From the point of view of the professional service staff, ten popular challenges emerged: language barriers, do not know how to job search, do not know what their skills or strengths are, find it difficult to approach employers, limited opportunities, lack of interpersonal skills like communication, teamwork, conflict result, lack of work experience, don't know what kind of job they like, lack of government support and lack of training or education. Some of the popular suggestions among the professional services' workers regarding the solutions they would like in place related to accessibility is based on a better accessibility of communication between employees and employers; jobs tailored to their customers' profile; the incorporation of a sign language interpreter at all the stages of the interview process; the creation of one or more guidelines to positively influence the employment agencies and employees to hire young deaf and hard of hearing. Some of the solutions proposed for young deaf job seekers are as follows:

- Provide accessible (signed) information about networking, professional services for job seekers, different training programs based on individual needs and provide workshops to companies about audism, discrimination, etc.

- More supportive professional services for deaf job seekers.

- Provide sign language workshops for deaf workers' hearing colleagues.

- Provision of all text available in the workplace in sign language and set a digital platform with educational videos in sign language.

- Introducing more deaf roles as professionals.

- Offer resources and alternatives to facilitate the process of job searching.

- Availability of interpreting services (e.g., remote interpreter services).

- Provision of simplified language.

- Provision of adjustments at the workplace if necessary.

- Having a dedicated professional service centre specialised for young deaf and hard of hearing job seekers.

- To develop an accessible website portal designed for deaf and hard of hearing youth job seekers where they can navigate through and all the resources and materials with the best practices to write CV, cover letters and job applications, including a list of most common questions asked in the job interviews and advice on the wording to use to answer these questions. This website could also include other external social apps links to find jobs such as LinkedIn or other different employment websites for job listings (these can be either national or local).

STATE OF ART IN THE FIELD OF DIGITALIZATION IN EDUCATION

Five main areas can be identified when referring to the digital transition in the Italian Context: namely those are connectivity, digitization of the Public Administration, Artificial Intelligence and Industry 4.0, cybersecurity, digital skills of the population.

The National policy most recently supporting ad promoting digitalization is the so called *PNRR*, an acronym used to refer to the National Plan "*Piano Nazionale di Ripresa e Resilienza"* to foster growth and resilience. Such National Recovery and Resilience Plan (Pnrr) is the document that the Italian government has prepared to illustrate to the European Commission how the country intends to invest the funds that will arrive under the Next Generation Eu programme. The plan was created following the guidelines issued by the European Commission and is divided into three main axes: digitization and innovation, ecological transition and social inclusion.

Connectivity is the basis upon which the other fields can develop. In such area, Italy is directing enormous resources for the lines and networks -around 6.7 billion-, qualifying the Country among the few ones that have also planned investments for exploiting 5G net and the European 5G corridors.

The digital transition of enterprises and of the business sector is in fact among the major challenges of the European industrial policy together with that of environmental transition or green 'challenge'. Also on this aspect, Italy is among the top investors in EU to support SMEs in the innovation process. By far, the largest portion of PNRR investments are allocated to the digitization of companies: 18.7 billion euros, another figure placing Italy at the top of the ranking in terms of dedicated resources. Another impressive figure is the allocated budget to digitization of public administration and public services: 11,7 billion of euros. The same is true for implementation of cybersecurity innovation; 3D technologies for industrial sector and overall modernization of the Italian productive and 3rd services sector(s). Nevertheless, Italy ranks first for investments also in the promotion of new skills with more than 4 billion euros, followed by France and Poland.

The investments of goods and resources into education in order to foster digital skills acquisition and upgrading are a very preponderant voice of expenditures within Italian Government expenses but the overall digital transformation of Education is still a very challenging process encountering a series of obstacles, difficulties and so on. On the development of digital skills, following the common EU direction envisaging in members' countries defined measures to increase computer skills in the population, both in the professional and educational fields; Italy is guided by the National Strategy for Digital Skills and its Operational Plan, promoted by the Department for Digital Transformation of the Presidency of the Council of Ministers, which mission is to close the current gap on digital skills with fellow EU advanced countries by 2026.

However, despite the Operational Plan, the participation of women and of the most vulnerable groups in the common measures for upgrading digital skills both basic both advanced – migrants, people with mental and physical disabilities included deaf citizens-and the over 65 years old -is not incisive and those categories are often left behind. Such situation is due to a general lack of more structured reforms aimed at ensuring greater participation and social inclusion for vulnerable citizens.

VET education is offered either by ITS schools, which are institutions of excellence with a high post-diploma technological specialization; either by private providers and training centers working as proper business as well as at public level by governmental subsidies led providers named CPIA specifically conceived to train adult learners.

Established almost a decade ago, the CPIAs, although playing a key role in the processes of inclusion and social cohesion, still remain in the shadow of the overall education and training system of Italy. Distributed throughout the national territory but with almost 70% of them based in the central-northern regions - the 130 Italian CPIAs mainly teach foreigners (80% of learners) basic skills. The current state of art of digitalization of education, specifically in VET sector, is characterized as said before by a plethora of factors qualifying the local conditions extremely challenging for what concerns the teaching of STEAM subjects; the implementation of 3D technologies within curricula and the inclusion of more vulnerable categories of learners such as DEAF people. Among such traits, the more striking is the extremely low level of digital skills in the population; the differences in digitalization due to age: the so called generational gaps, but also skills and competences shortages also among young and educated individuals with a significant discrepancy in terms of geographical origin.

The underdevelopment of technologies and lack of proper trained people is especially pervasive in rural areas of the Country and in its southern Regions and Islands. Another aspect making it difficult to fully exploit and benefits form the advantages of digitization and steam is the gender gap which sees Italian women falling behind in almost all figures pertaining education and new ICT. In addition to this the school system is not always ready to properly train the students for the rapid and disrupting development of innovative products; processes and methodologies leading to a mismatch in terms of market demands for graduates in ICT subjects, resulting in a lack of skilled and properly trained professionals in STEAM.

In this context, it is clear how some population groups suffering disabilities or coming from a delicate background is put in a very vulnerable position and at high risk of exclusion. This is true for migrants, refugees, women, older and senior people, people living in remoted or/and rural areas as well as for disabled or physically impaired citizens. Deaf Italian are unfortunately extremely at risk when describing the panorama of digital education, a risk coming from a substantial gap of skilled trainers and educators and impactful policies and measures which can break the silos still existing when dealing with full social, professional and 'digital' inclusiveness.

CONCLUSION

The education of the deaf highlight that linguistic barriers are still existing in every social context for people with severe hearing loss, including digital accessibility and job inclusion.

Italy ranks among the lowest in the "Human Capital" dimension - which includes the use of the internet and basic and advanced digital skills (DESI 2020). The lack of digital skills is one of the main factors that negatively affects development and job opportunities, for everyone, and for youngsters with special needs, including deaf, this can represent a risk of multiple discrimination.

REFERENCES

Bosco (2013) *Comprendere la sordità. Una guida per scuole e famiglie.* Carocci

Cavalieri, Chiricò (2005) *Parlare, segnare. Introduzione alla fisiologia e alla patologia delle lingue verbali e dei segni*. Il Mulino

Rinaldi, Tomasuolo, Resca (2018) *La sordità infantile. Nuove prospettive d'intervento.* Erickson

Russo Cardona, Volterra (2007) *Le lingue dei segni. Storia e semiotica*. Carocci

Volterra (2004) *La lingua italiana dei segni. La comunicazione visivo-gestuale dei sordi*. Il Mulino

Sacks, O. (1990) *Vedere Voci. Un viaggio nel mondo dei sordi.* Adelphi

https://repubblicadigitale.innovazione.gov.it/assets/docs/national-strategy-for-digital-skills.pdf

https://link.springer.com/article/10.1007/s11125-020-09509-7

https://www.frontiersin.org/articles/10.3389/fsoc.2020.612559/full

https://www.economyup.it/innovazione/cos-e-l-industria-40-e-perche-e-importante-saperla-affrontare/

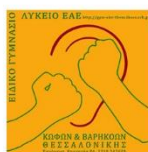https://www.ridap.eu/dossier-largo-ai-cpia-scuole-di-cittadinanza-e-benessere-per-adulti-e-stranieri/

https://www.repubblica.it/tecnologia/2022/07/28/news/indice_desi_2022_italia-359516640/

https://www.corrierecomunicazioni.it/pa-digitale/digitalizzazione-servizi-pubblici-italia-in-stallo-nonostante-il-pnrr/

https://www.openpolis.it/parole/cose-il-pnrr-piano-nazionale-ripresa-e-resilienza/

https://innovazione.gov.it/notizie/articoli/competenze-digitali-al-via-il-nuovo-piano-operativo/

www.3d4deafproject.eu