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Educational skills and STEMs to overcome the digital gender divide in Italy

Dear Moderator, dear speakers, distinguished participants,

at the outset, let me thank the Swedish Chairpersonship and the OSCE Secretariat for dedicating a session of the agenda to this critical topic.

Human capital development, bridging gender and other digital divides, women and STEM: all these issues were at the core of the initiatives promoted by my own country – Italy – when it chaired the OSCE in 2018.

As some of you may recall, back then a Chairmanship Conference was organized on “Digital Transformation – Challenges and Opportunities for Women to Shape Economic Progress”. It focused on identifying and analysing inequalities constraining women's meaningful participation in the economy, with special attention to the opportunities and challenges associated with the digital transformation. It was an innovative approach for a security organization such as the OSCE.

Participating States were then able to agree, in Milan, on a Ministerial Council Decision proposed by Italy on human capital development, with a specific paragraph dedicated to promoting - and I quote – “education, vocational training and retraining, in particular for women and girls, and especially in the fields of science, technology, engineering and mathematics, as a key measure to reduce digital divides and to advance the empowerment of women” (end of quote).

I am particularly to happy to continue this important conversation today. Exchanging best practices and providing examples of successful policies do help all OSCE participating States fulfilling this political commitment they have taken in 2018.

INCREASING WOMEN’S PARTICIPATION IN “SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS” (STEM)

In the knowledge that the under-representation of women in the fields of science and research, especially in top positions, limits the potential for research and development and is an brake on the economies of countries, Italy has undertaken a series of initiatives to raise awareness of the new generations, encouraging the access of female students to the scientific-technological, engineering and mathematical (STEM).

Impact on the education system, in order to encourage girls to pursue careers with a traditional male majority, is the starting point for a required trend reversal to counter the under-representation of women in strategic and crucial sectors for economic growth.

With the aim of bridging the gap in scientific subjects and spreading an increasingly inclusive culture in Italy, in 2016 the initiative “IN SUMMER THE STEMS LEARN - Summer Camps of Science, Mathematics, Informatics and Coding” was launched, promoted and implemented by the Department for Equal Opportunities of the Presidency of the Council of Ministers, in partnership with the Ministry of Education, University and Research.

The main objective of this initiative was to bring primary and secondary school students closer to the study of STEM subjects through free and innovative training activities. Furthermore, the initiative sets the scope of promoting the reconciliation of life-work times, encouraging educational institutions to keep their premises open for training initiatives for at least two weeks during the summer period. In addition it has had the aim of encouraging the integration of disadvantaged people through a greater social inclusive approach.

Involving students aged from 6 to 13 in the realization of projects, the schools have been able to experiment pioneering training benefiting from the collaboration with public and private subjects highly qualified in STEM subjects (Universities, public and private bodies, research centers, museums, cultural foundations and companies): a list of more than 200 actors was compiled including all those stakeholders interested in collaborating with the Department for Equal Opportunities in this field.

Thanks to the first edition of the initiative, more than 200 schools have received funding for a total of 2 million euros for the organization of summer camps in the school year 2017 in more than 100 Italian cities throughout the country. In total, more than 2,000 laboratory days and more than 8,000 hours of training were provided to more than 6,000 students (of whom at least 60% were women). In addition, about 400 partners were involved, including many of the main Italian universities, many companies, as well as foundations, museums and research institutions.

In view of the success achieved in 2017, the initiative was replicated in 2018. With a budget of about 3 million euros, it was possible to finance about 300 schools throughout Italy for the organization of summer camps aimed at students in 2018

and 2019 in STEM subjects. In particular, the total estimated involvement is about 18,000 students (of which at least 60% are girls).

The STEM 2020 Call for Proposals has been again released (EUR 2 million, later increased to EUR 4 million due to the success of the initiative) for the funding of projects aimed at implementing educational activities in STEM subjects both in the context of summer camps and during school activities. About 1000 applications were received.

Moreover, European funds, from Cohesion Policy Funds to the Next Generation EU, can also play an important role in supporting measures including, as is being debated in Italy, the promotion of STEM subjects and the dissemination of digital culture for qualified inclusion of women in the labour market and for sustainable development; for support female entrepreneurship, and the recruitment of women and mothers; for interventions in favour of female empowerment.

IMPROVING WOMEN'S AND GIRLS' ACCESS TO EDUCATION AND DIGITAL TECHNOLOGY

The National Strategy for Digital Skills and Jobs has been adopted on 31 July 2020. It identifies four axes of action:

- the development of digital skills needed within the education and higher education cycle, under the coordination of the Ministry of Education and the Ministry of Universities and Research;
- the reinforcement and development of digital competences of the workforce, both in the private and public sectors, including e-leadership competences, coordinated by the Ministry of Economic Development and the Ministry of Public Administration;
- the development of specialised ICT skills for new markets and jobs, largely related to emerging technologies and the ownership of key competences for future jobs under the coordination of the Ministry of University and Research and the Ministry of Economic Development;
- enhancing digital skills needed to enjoy citizenship rights (including full use of online services, which is particularly necessary at this time) and informed

participation in democratic dialogue, coordinated by the Minister for Technological Innovation and Digitisation.

In order to close the current gap by 2025 and to make digital technology a real opportunity for social and economic growth, targeted actions have been defined and introduced in the Operational Plan of the Strategy. It has been published in December 2020 and provides measures deemed necessary to break down digital illiteracy and develop a necessary path of cultural change in all sectors of society.

The main objectives to be achieved by 2025 are the following ones:

- raise the share of the population with at least basic digital skills to 70%, an increase of more than 13 million citizens compared to 2019, and close the gender gap to zero;
- double the population with advanced digital skills;
- triple the number of ICT graduates and quadruple the number of female graduates; double the share of companies using big data;
- increase the share of SMEs using ICT specialists by 50%;
- increase by five the proportion of the population using public digital services to 64%. To bring Internet use to the levels of the most advanced European countries, even among the least young categories of the population (84% in the 65-74 age group).

The Operational Plan addresses 41 operational lines identified in the Strategy through 111 interventions and provides a dashboard of more than 60 indicators to monitor the impact on the 4 axes of action. For each intervention, the main milestones and result indicators with related targets are defined.

The National Coalition for digital skills, under the direction of the Technical Steering Committee, is the key-body in charge for the achievement of the aforementioned objectives. It is composed of public and private actors who have endorsed the “Manifesto per la Repubblica Digitale”, proposing concrete actions to gain measurable and quantifiable results.

As reminded, within the Operational Plan specific actions are aimed at training 200,000 women between aged from 15 to 70, with an education level not higher than

lower secondary school. The Department for Equal Opportunities has worked for the adoption of vouchers for the purchase of connectivity and training courses for girls and women. Furthermore, in relation to the “Manifesto per la Repubblica Digitale”, 34,000 women (12,000 of whom are students) have attended training courses on topics such as: programming, robotics, electronics, data and artificial intelligence, and communication through social networks.

Two budget lines have been provided by the Department for Equal Opportunities in this field:

- Digital vocational training - Vocational training for female and male home workers to gain digital knowledge – year 2020, 3 million euros
- Fund for Digital Training -Digital training in partnership with Google Digital Training , addressed to women, managed by the Department for Equal Opportunities - Prime Minister's Office, on a dedicated digital platform – year 2020, 3 million euros.

UPDATING POLICIES TO THE NEW PANDEMIC CONTEXT CAUSED BY COVID-19

During the pandemic the Ministry for Equal Opportunities and the Family set up a female team, “Women for a new Renaissance”, convinced that by starting from women and with women we can build an unprecedented path of growth for the Country. The Task Force was made up of twelve women, distinguished persons for their original and high-level cultural and scientific contributions in their professional fields, who provided for effective, feasible and targeted proposals in line with the purpose for which the team was created.

It was divided into thematic subgroups and worked with attention and energy to produce a report, based on data and scientific evidence on the impact of the epidemic in different sectors but focused, at the same time, on the opportunities for social, cultural and economic restart in Italy after the emergency.

The final document, that was launched on 16 July by the Prime Minister Giuseppe Conte, indicates the following proposals for action: to increase the percentage of women in every working sector, to overcome barriers that prevent the advancement

of career paths, in particular in the fastest growing fields (STEM, computing, cloud computing, data and artificial intelligence), to address gender stereotypes that prevent women to participate in leadership positions, to activate measures to ensure the financial independence of girls and women; in addition interventions have been proposed to boost and develop female employment, to introduce gender impact assessment for businesses, proper measures to reconcile life time, to support care parenting and for women victims of violence, as well as integrated measures to uphold female empowerment and the creation of conditions for the development of female talent.

In the above mentioned Report delivered attention is paid to the digital world, contemplating the reduction of the digital gender gap through the acquisition of skills, favouring vocational e-learning and training also in the business sector, with specific programmes for women who risk being excluded from digital innovation or to facilitate their entry into the labour market. In general, politicians and institutions argue that bridging the gender digital divide would also make it possible to overcome many difficulties in the labour market and consequently mitigate socio-economic inequalities, increasing performance in the education sector and having a considerable impact on economic growth.

Ad hoc tools are needed and will be provided that let women to be fully free to choose their professionalism and maternity and to rebalance the distribution between men and women for paid work and unpaid care work.

SCIENCE: ENGINE OF A NEW RENAISSANCE - Educating and training in STEM subjects:

- Integrating university courses, to promote dialogue and complementarity between humanities and science subjects in the context of a new working and knowledge model, which requires renewed and multi-disciplinary methods and skills. The proposal is to introduce compulsory humanities subjects in the STEM paths and compulsory scientific subjects in humanities paths.
- Establishing a single platform to offer STEM activities and internships to girls, encouraging experimental activities, in cooperation with different stakeholders (companies, research centers, schools, etc.). Starting from summer 2020, promoting

and realizing summer camps with a predominant component of STEM subjects, also introducing an approach ‘hands on, learning from failure’.

- Renewing the mathematics teaching model with the adoption of innovative pedagogies, the growing proximity between neuroscience and education, the use of digital learning opportunities, the cooperation between parents and teachers with adequate mutual training and a strong attention to gender issues.
- Introducing learning methods from early childhood based on play and experiment, curiosity and problem solving as an introduction to the scientific method.
- Requiring mandatory lifelong learning for teachers in science and mathematics from primary school onwards, as well as training in digital literacy and awareness raising on gender stereotypes.
- Promoting the importance of STEM education for girls in view of future jobs, and the central role that knowledge/skills in these areas have in building the future (environmental issues, energy, sustainable development, health).
- Using digital teaching to provide all students with the possibility of a high quality and gender-neutral scientific and technological education, so as to strengthen the skills that underpin both science learning and digital knowledge.

Training new digital skills

- Promoting digital skills among the elderly (mostly women, considering the demographics of 65+): promoting intergenerational exchanges for the acquisition of digital skills through senior/younger twinning, encouraged for example by training credits for high school students or young university students.
- Designing specific programmes of digital training and new STEM skills for young women on maternity leave.
- Reducing the Digital Gender Gap through the acquisition of skills (Digital Re-skilling), favouring lifelong learning on e-learning mode (also in companies) with specific programmes for women who risk being excluded from digital innovation or to favour their entry into the labour market, with particular attention to women with disabilities.

Promoting women’s careers in university and research

- Reviewing and harmonizing the regulations governing scholarships or research grants, also in order to ensure adequate financial coverage, both in the case of interruption for maternity leave and family care.
- Considering, in the evaluation of university careers and research activities, the use of maternity/paternity leave or absence for care/family reasons so that they do not

result in penalties within a timeframe in line with the evaluations of EU projects (for example, considering at least 18 months per child, with a maximum of 36 months).

- Providing post-graduate and post-doctoral scholarships in STEM fields specifically addressed to women, to be awarded on the basis of the value of the research project.

COMMUNICATION: WORDS AND IMAGES TO GENERATE CHANGE

- Eradicating communication gender stereotypes through a new language in STEM, more inclusive also for women, so far animating a public debate on the role of science in solving global challenges, the possibility of scientific careers and promotion of STEM careers on TV channels with female reference models in different STEM areas.

- Making STEM subjects appealing for younger generations, in particular girls, through a communication campaign designed to address the concerned age groups and using mainly social media to convey a positive message about STEM education.