

PISH COUNTRY STUDIES

(Italy)

PISH PROJECT



Erasmus+

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Section 1: Introduction

Table 1: Profile of respondents to the country report.

Profile of the respondents	
• Number of teachers who filled in the survey	6
• Number of students who filled in the survey	3 foreign students + 3 local students
• Names of HEI represented in the Interview	University of Basilicata
• Countries of origin of foreign teacher(s) interviewed (if the teacher is a foreigner).	n/a All teachers were Italian
• STEM courses taught by the teachers interviewed	Maths Natural Science Chemistry Physics
• Country of origin of students interviewed	Italy, Romania, Morocco
• STEM discipline or field of study of the student	Maths Informatics
• Gender of teachers interviewed	4 females + 2 males
• Gender of students interviewed	6 males



Note on methodology.

The Italy case study was carried out using a mixed methodological framework. Due to COVID-19 lockdown restrictions, it was more complicated to organise live meetings. So the interviews were carried out online. All students and teachers have filled in a questionnaire that was based on the research questions designed for the purpose of this report.

So the Italian case study was carried out using a modified methodological framework. Instead of individual interviews, we prepared a survey that was sent to teachers and students of Italian HEI.

The reason for this change was the low level of engagement from the participants. Despite interview requests disseminated in form online, too few participants signed up for interviews but we reached the minimum number established by the partnership, even if we had a delay caused by covid.

The survey gives the participant more anonymity so that it can be easier to express their views with more freedom.

Section 2: State of the art on HEI STEM in Italy

Section 2.1: Profile of STEM students in Italy

Table 2: Profile of HEI STEM students in Italy

Indicators	
<ul style="list-style-type: none">Number of HEIs in the country.	There are currently 95 university institutions (61 state universities, 17 non-state universities, 6 higher schools and 11 online universities).
<ul style="list-style-type: none">Number of STEM students in each HEI.	94,603 of 2020/21 STEM students in total (including 37,155 women)
<ul style="list-style-type: none">Average number of students per class.	Not available
<ul style="list-style-type: none">Average age range of STEM students (Optional)	n/a



<ul style="list-style-type: none">● Average number of foreign students in total	<p>According to the latest "Education at a glance" report published by the OECD, foreign students in Italy are only 5,2% of total university students in 2020/2021.</p> <p>Excluding mobility exchange programmes, Italian universities attract fewer students from abroad, compared with other OECD countries. The share of foreign students in Italy is 5% (compared with 9% in EU23 countries). Recent improvements in the capacity to attract foreign students – the number of foreign students has increased by 12% between 2013 and 2016 – have been offset by the large number of Italian nationals studying abroad, which has increased by 36%, over the same period.</p>
<ul style="list-style-type: none">● Resident foreign students	<p>This number is not available for Italy, but in Lombardy for the academic year 2020-2021 it is estimated * an increase of at least 5,400 international students enrolled in the first year of degree courses, equal to + 5.6% (+ 3.4% overall students)</p>
<ul style="list-style-type: none">● Percentage of students from EU and non-EU countries	<p>Not available</p>

More information can be found in the following guide: <http://www.miur.it/guida/guide.htm>

The main principles that lay the foundations for the Italian education system, and in particular higher education, are set down in the Italian Constitution that was adopted in 1947.

<https://studyinitaly.esteri.it/en/the-italian-higher-educaton-system>

The Italian Higher Education System includes:

- *Universities*
- *The Higher Education for Fine Arts, Music and Dance sector (AFAM- acronym for Alta Formazione Artistica e Musicale)*
- *Higher Technical Institutes (ITS – acronym for Istituti Tecnici Superiori)*

Universities are also divided into private and publicly funded institutions. The quality of the education, however, is comparably high at all institutions of higher education. Universities offer strong theoretical and academically-oriented degree programmes and a broad range of disciplines. Some universities are specialized



in certain subject areas, such as Polytechnics. University education is provided by state universities and non-state universities (11 of which are online universities). Universities are autonomous bodies; they adopt their own statutes, establish their own governing bodies as well as their teaching and research structures.

The University sector is organized as follows:

- Undergraduate Degree: *Laurea*, corresponding to a first-cycle qualification (Bachelor), issued at the end of a three-year study programme (180 ECTS credits);
- Graduate Degree: *laurea magistrale*, corresponding to a second-cycle qualification (Master), issued at the end of a two-year study programme (120 ECTS credits) or to a 5-6-year single study programme (*laurea magistrale a ciclo unico*, 300-360 ECTS credits);
- Postgraduate Degree (PhD): *dottorato di ricerca*, corresponding to a third-cycle qualification (Doctoral), issued at the end of a minimum three-year study programme.
- Specializing Masters and Continuing Education Programs

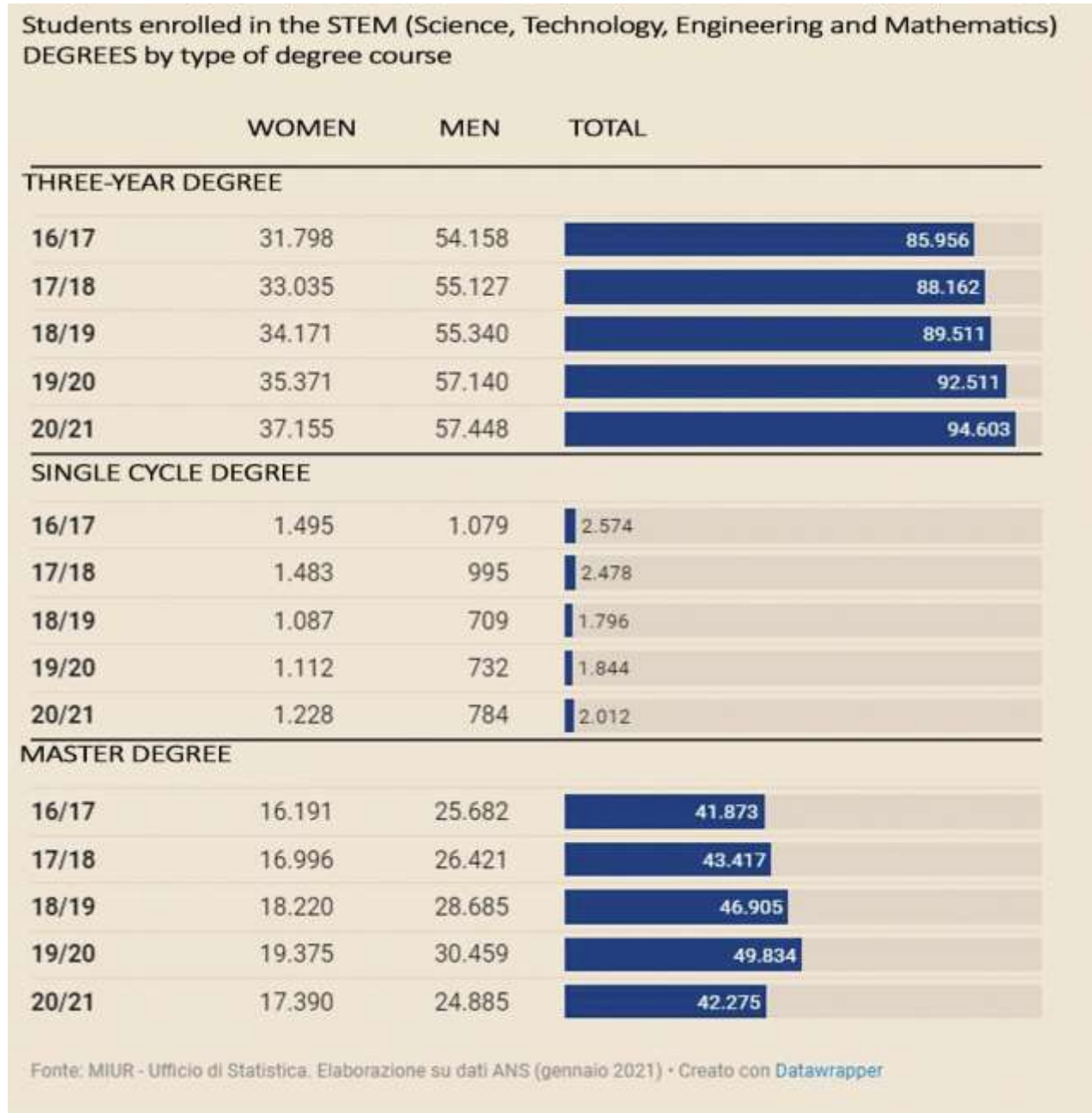
<http://ustat.miur.it/dati/didattica/itala/atenei>

STUDENT POPULATION				
<u>Students</u>	<u>Total</u>	<u>Women</u>	<u>Foreigners</u>	<u>Reference year</u>
<u>Registered</u>	330.898	184.040	17.712	2020/2021
<u>Subscribers</u>	1.793.210	1.009.109	101.091	2020/2021
<u>Graduates</u>	344.850	196.348	15.648	2020

The total number of enrolled students includes those enrolled. Total enrollments refer to students of the three-year and single-cycle degree courses



STEM freshmen increase, the three-year ones from 85,000 in 2016/17, to 94,603 in 2020/21 (including 37,155 women). Also in the single-cycle master's degree in Architecture-Building Engineering we have 2,012 students enrolled and there are 1,228 women.



Section 2.2: State of the art on STEM education in Italy

National attitude/policies and initiatives towards promoting STEM education in Italy.



The National Digital School Plan launched by the Italian Government with the Law 107 of 2015 (known also with the specific acronym of PNSD) is based on the enhancement of STEM education.

This reform (Law 107/15) is also known as The Good School (La and it is addressed to improve educational outcomes.

The law introduced school autonomy, hiring a significant number of new teachers, introducing a merit-based component to teachers' salaries and enhancing digital innovation and skills in schools

The indicated plan is a guidance document developed by the Ministry of Education, University and Research in Italy and it aims to create a new Italian education system using digitization and all the opportunities offered for training, skills and employment.

The Plan has the following 4 fundamental steps:

- 1) tools,
- 2) skills,
- 3) accompaniment,
- 4) training

to be realised thanks to a series of objectives and/or actions in specific areas of initiatives.

This recent reform has introduced important changes, such as compulsory teacher professional development, a teacher appraisal mechanism and a one-off yearly bonus for high-performing teachers

The “Digital, Entrepreneurship and Work” area promotes the digital skills and employment as well as careers in STE(A)M (Science, Technology, Engineering, Arts & Maths) and enhance the relationship between school and work.

The STEAM Lab project is also part of the PNSD and provides classrooms dedicated to the experimentation of competitive paths in STEM for students of all levels.

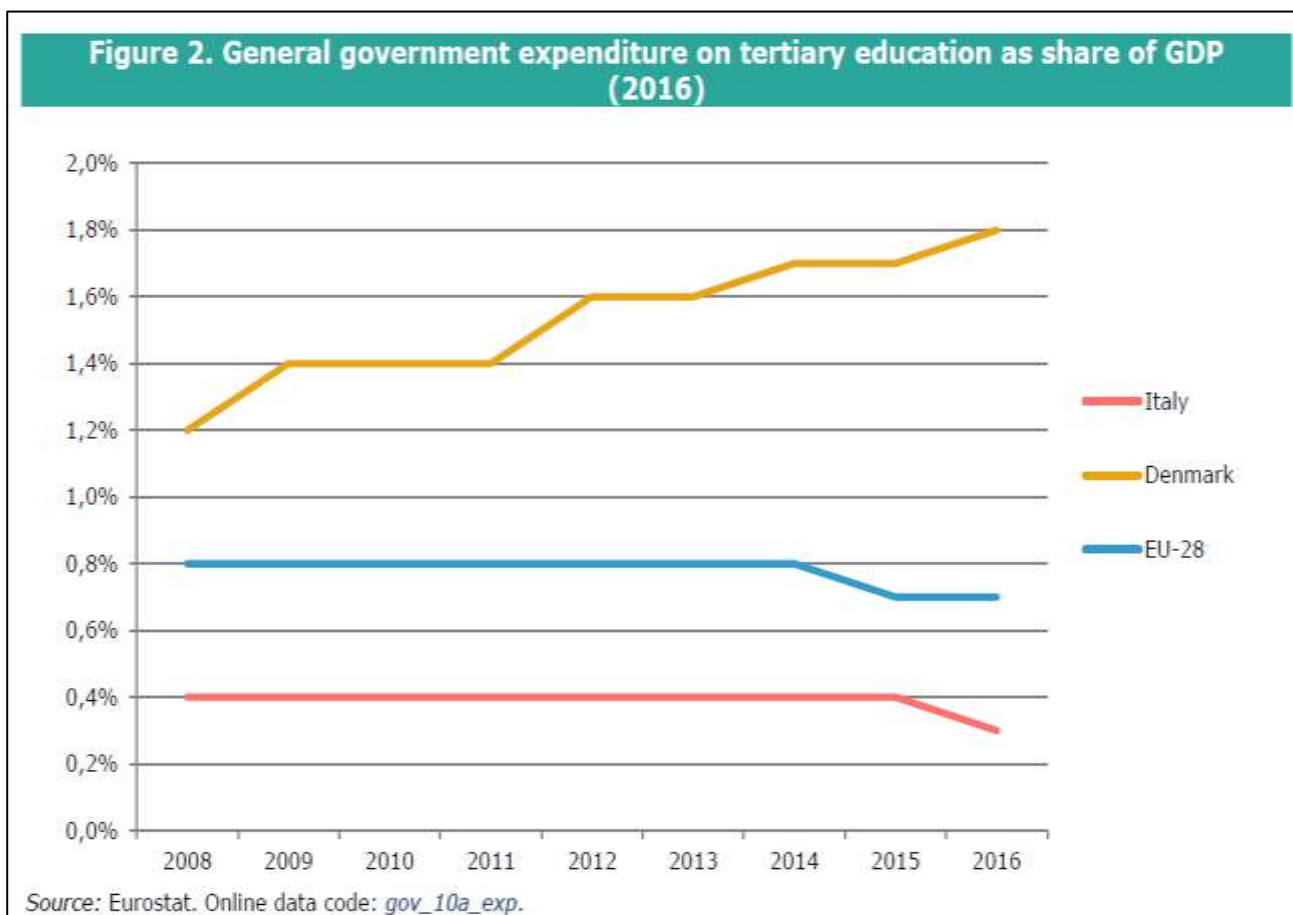
Of course, always the Ministry of Education, University and Research is the institution responsible for educational governance and for deciding the standards principles.



In 2011, Italy established also the National Agency for the Evaluation of the University and Research System (ANVUR) to evaluate higher education institutions and increase meritocracy in Italian research system

University initiatives towards promoting STEM education in Italy

As it could be possible to read from the following graphic the general government expenditure on tertiary education in Italy was among the lowest in the European Union in 2016.



STEM graduates in 2017 made up 26.5% of graduates in the entire calendar year (approximately 276,000) with the vast majority (14.5 %) opting for engineering.

In Italy there is also a National Student Registry (Anagrafe Nazionale Studenti, ANS), which provides data in real time on the academic career of every student enrolled in the Italian university system.



Quality assurance in higher education is carried out through internal institutional evaluation and external evaluation by the National Agency for the Evaluation of the University and Research System.

To try to realize a better access to tertiary education, in 2017 the government introduced a tuition fee exemption for students coming from households with an income below €13,000, and partial exemptions for incomes between €13,000 and €30,000.

The 2020 report drawn up by Talents Venture and STEAMiamoci on the Gender Gap in STEM faculties emphasizes the need to train and employ properly trained human capital and highlights gender differences in access to STEM skills in Italian universities.

The gap is demonstrated by the following numbers: 55% is the percentage of women enrolled in our university system (2018-2019). On the other hand, if we consider the STEM courses, the situation is reversed and the percentage drops dramatically, in fact "in the last academic year, of all students enrolled in STEM faculties, female students represented only 37%"

If the percentages do not make the idea clear, the report confirms even better that "the number of girls enrolled at university is 100, 82 attend non-scientific degree courses, while 18 are dedicated to the study of STEM disciplines and 100 the number of the students enrolled at university, 39 are instead those who attend STEM disciplines".

In 2020, 24% of Italian graduates between the ages of 25 and 34 have a degree in the scientific and technological subject areas, but the gender gap remains very important: the share rises to 37% among men (over one in three graduates) and falls to 17% among women (one in six graduates).

Despite their growing importance in the world of work, not many young people are approaching STEM. According to a recent OECD report, Italy, unlike other European countries, is still strongly linked to tradition and little attracted to innovation, with the largest number of students choosing to specialize in the arts and humanities. At the moment, only 24% of Italian recent graduates enroll in science faculties, probably because they consider them too difficult. But, even if the road is uphill, there are some forecasts that bode well and on which we need to reflect. Between 2015 and 2025, while employment will grow by 3%, the hiring of IT professionals will increase by 14.9%, those of engineers and researchers by 36.9%, for a total of 7 million new jobs. work for experts in STEM disciplines.

So the STEM degrees are very important for the job market and for the Italian economy: in fact STEM opens many professional opportunities and personal careers to students and therefore Italy is trying to increase its efforts to promote an ever better and high quality STEM (also because one in four industries, around 23%, cannot find the right STEM profiles).



Table 3: Overview of class setting for HEI STEM students in Italy

General Respondent Indicators	
<ul style="list-style-type: none"> • Average number of students in the respondent students' classes. 	20-25
<ul style="list-style-type: none"> • The profile of groups taught by the teacher respondents 	Normally 20-25 students per class 2-10% female – 80-98% male 1-2% foreign students
<ul style="list-style-type: none"> • Teaching methods used by teachers (in the order of popularity) 	<ol style="list-style-type: none"> 1. Group works 2. a combinations of group work and assignments 3. assignments 4. class discussions 5. lectures 6. presentations 7. study visits
<ul style="list-style-type: none"> • Teaching methods preferred as reported by students (in the order of popularity) 	<ol style="list-style-type: none"> 1. group work 2. a combinations of group work and assignments 3. presentations 4. lectures 5. individual assignments 6. class discussions 7. film screening
<ul style="list-style-type: none"> • Mode of student interaction within the class 	Normally they use group works with discussion and the use of online tools too, especially during the covid pandemic period.
<ul style="list-style-type: none"> • Language of instruction 	Italian and English



Section 3: Intercultural Communication Challenges faced by STEM students

Section 3.1 Intercultural challenges encountered by Students within the classroom

1. **Intercultural communication challenges as experienced by students (both foreign and local) in the classroom**
 - a. Language barrier
Local and foreign students reported language barrier as the most important problem,
Nobody had an experience of studying abroad
 - b. Intercultural challenges
Nobody reported this problem.
 - c. Miscommunication with foreign students
Some problems of communication was solved using English language
 - d. Differences in working and studying habits
Foreign students considered the level of the Italian university very good even if too much
teoric and not very practical
 - e. Miscommunication with teaching staff
Miscommunication with teaching staff sometime does not permit to fully understand what is
expected from the teachers.
2. **Challenges as observed by the teachers in the classroom -**
 - a. Language barrier
Also the teachers reported language barrier as the most important problem,
They suggested that the University system could organize a specific language tutor to help
the integration



- b. Inability to understand what is expected from various assignments

Some teachers indicated that some times they have to repeat a lesson for a foreign students that not always understand what to do in a clear way.

Section 3.2: Intercultural communication challenges encountered outside the classroom

Making this survey it was evident that, different times, local and foreign students do not have many occasions to stay together and have intercultural communication, even if there are some social activities to try to mix them.

This because especially the local students often t do not participate in these socialization meetings for various commitments with their friends or families of reference

Section 4: Challenges encountered by HEI Teachers in solving the identified challenges.

The interviewed teachers, that normally work with little group of 20-25 students in each classroom) observed the following challenges:

1. Language barrier (this was the most important and relevant problem indicated by tecahers)
2. Lack of understanding of the local cultural context
3. Miscommunication with foreign students
4. The inability to understand what is expected from various assignments

The teachers underlined, that, of course, these challenges are different depending from the students but in general they have faced them.



Section 5: Initiatives adopted by HEI teachers to solve the problem

The teachers indicated the following solution to solve the challenges they underlined in the survey:

1. Create work group in which there could be local and foreign students together to permit them to mix and have intercultural exchange
2. Promote some peer and cooperative learning
3. Have a specific language tutor to help the foreign students
4. Use online tools in more appropriate way
5. Give instructions and communication in a clear way to avoid misunderstanding.

Section 6: Recommendations from students and teachers on how to solve the challenges.

The students have suggested to have:

- More social opportunities/initiatives and public encounters
- A tutor and a manual/guide to have better information on their university
- Work groups where they could exchange opinions with others
- Some or more lessons in foreign languages (especially English)

References

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