

Italian student satisfaction with online classes during the COVID-19 lockdown in Spring 2020

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Abstract

This paper focuses on the online learning experience of Italian university students during the Spring 2020 national lockdown due to the COVID-19 pandemic. The subject of student satisfaction is analysed across various aspects of distance learning. Furthermore, the topic of the aspects and circumstances that appear to have the most effect on the overall satisfaction of students is analysed. This analysis of student satisfaction with distance learning was carried out as part of the 9th Italian Eurostudent Survey on the living and study conditions of university students 2019-2021.

Introduction

The "9th Eurostudent Survey on the living and study conditions of university students" (Finocchietti et al., 2021)⁴ was conducted in Italy as part of the Project "EUROSTUDENT VII - Social and Economic Conditions of Student Life in Europe 2018-2021" (Hauschildt et al., 2021)⁵. The Italian survey analysed the living and study conditions of students enrolled in first cycle (bachelor), second cycle (master's degree) or single-cycle (single-cycle master's degree) programmes in the 2019-2020 academic year at state universities and legally recognised non-state universities⁶.

The survey was conducted through interviews held using CATI (computer-assisted telephone interviewing) methodology on a sample of 5,010 respondents, representing the entire student population of reference. The field phase of the 9th Italian Eurostudent Survey took place from

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⁴ The survey was promoted and co-financed by MUR - Ministry for Universities and Research (https://www.mur.gov.it/) and was conducted by CIMEA - Centro d'informazione sulla mobilità e le equivalenze accademiche (http://www.cimea.it/) with the collaboration of BVA Doxa (https://www.bva-doxa.com/) and the University of Camerino (https://www.unicam.it/). The survey was co-financed by the Erasmus+ programme of the European Union.

⁵ The Survey EUROSTUDENT VII has been co-funded by the Erasmus+ Programme of the European Union.

⁶ Online universities (università telematiche) were not included in the survey.



the end of May to the beginning of July 2020, during the emergency caused by the effects of the COVID-19 pandemic. The emergency led to a national lockdown, which resulted in the suspension of classroom teaching activities in Italian universities and the rapid and generalised start of distance learning implementation.

Two weeks after the total closure of the universities (lasting from 10th March to 30th April 2020; OECD, 2021), 88% of courses were being held online; at over half of all Italian universities the initiative involved more than 96% of the courses (Cesco et el., 2021; Monteduro, 2020). Most of the courses were delivered synchronously, in line with what was observed in the overall European scenario (Farnell et al., 2021; Doolan et al., 2021). This modality was largely prevalent compared to the asynchronous mode. The teaching staff often received support for the use of the different platforms (only in some cases proprietary) and software used by universities; the adaptation of content, teaching methodologies and formats, however, appears to have been left largely to personal initiative (Cesco et al., 2021). Despite this, in the majority of cases the teaching staff made teaching materials available online. Didactic continuity was therefore guaranteed, even if the prevailing online teaching model was a traditional "transmissive" model, albeit enriched by interaction with students (Ramella et al., 2020). These elements lead us to identify the prevalence in Italy, as indeed in other European countries (Farnell et al., 2021), of an "emergency remote teaching" model (Hodges et al., 2020) in the pandemic emergency of Spring 2020. The response of Italian students is measured by the Eurostudent Survey: approximately 85% of the students in the Eurostudent sample attended classes remotely, for the most part continuously. The wide participation of students also led to an increase in attendance compared to classes in the first semester of the same academic year (Monteduro, 2020).

At the request of MUR - Ministry for Universities and Research (promoter and funding body of the survey), and in coordination with CRUI - The Conference of Italian University Rectors, it was decided to integrate the Italian Eurostudent questionnaire with a number of questions aimed at collecting the behaviours and evaluation of students on the distance learning



experience. In this way, in addition to documenting the living and study conditions of students in the first semester of the academic year and making it possible to compare them with the results of previous editions, the survey collected information on the distance learning experience during the months of the emergency, also collecting student assessments.

Field of survey

To respond to MUR's request, the Eurostudent working group tackled the problem of defining the field of survey, of drafting the research hypotheses and of identifying the objectives of the analysis and the expected results. In line with the general methodological approach of Eurostudent surveys, (aimed at bringing out the subjectivity of students), the work was performed by placing the students' point of view and their experiences at the centre of the analysis.

A first step was a review of the national and international information resources available at the time (April-May 2020) on the COVID-19 emergency. Reports and information from international organisations available online at that moment⁷ were analysed, which provided information on the existing situation and on the measures in place at the level of national systems and higher education institutions (IAU, 2020a; OECD, 2020a; World Bank, 2020; Farnell et al., 2021). Online reports and information were also analysed, focusing more specifically on student life and student perspectives (Doolan t al., 2020; Farnell et al., 2021). Despite the heterogeneity of the sources used and the availability of information which was not always homogeneous, this research activity made it possible to identify some relevant insights and to define a first methodological input for the Italian survey: the field of survey must consider both the structure and context, and the personal (individual) dimensions of the distance learning experience. Both aspects emerged as relevant in the review carried out.

⁷ The reports and documents were analysed in the versions available in Spring 2020; some of them were later expanded and updated for final publication.



A second step consisted in a consultation with the heads of the "Permanent Laboratory on Didactics" of the Fondazione CRUI - Conference of Italian University Rectors⁸, which implemented the monitoring of the governmental measures relating to the pandemic emergency that had an impact on university life, as well as the forms and characteristics of distance learning and teaching offered by Italian universities. This consultation made it possible to document the prevailing methods of offering education by universities and to collect the first results of the discussion underway between the rectors and teaching staff on the implications of the experiences underway.

A third step consisted in the organisation of two focus groups with students; these were supplemented with some unstructured individual interviews⁹. The goal was to collect students' points of view on individual experiences and their proposals for themes and approaches to give solidity to the Eurostudent Survey.

The results of the consultation, of the focus groups, and the interviews confirmed the relevance of the two dimensions (structural and individual) for the analysis of the distance learning experience. Furthermore, they made it possible to identify and select the most relevant empirical aspects of this experience from the students' point of view.

Methodology

With reference to the many aspects of the topic of distance learning and teaching, the field of survey of the Eurostudent survey was focused on student satisfaction with different aspects of distance learning and on the satisfaction with the overall experience.

⁸ https://www.laboratoriopermanentedidattica.it/.

⁹ The focus groups were carried out with students from the University of Salento (Lecce) and the University of Sannio (Benevento), with the participation of around ten students each. The interviews were conducted with students from the University of Rome "Tor Vergata". The proceedings took place in April and May 2020.



The survey intended to answer the following research questions:

- 1. What was the response of Italian university students to the offer of online classes from universities?
- 2. What was the satisfaction of the students with the different aspects of distance learning proposed by the survey?
- 3. What level of satisfaction did the students express in relation to the overall experience of distance learning?
- 4. Which individual characteristics related to study paths appeared most influential concerning satisfaction with the individual aspects of the experience and for the experience as a whole?
- 5. Which aspects of distance learning proposed by the Survey appeared most relevant to determining overall satisfaction?

Following the methodology of Eurostudent surveys, the individual characteristics to be considered are strongly linked to the theme of the social dimension, which has long been identified as a strategic element of the policies and action plans of the EHEA - European Higher Education Area¹⁰.

To measure satisfaction with the various aspects of distance learning, twelve questions were asked on specific aspects of the same and, at the end of a short interview, an evaluation of the experience as a whole was asked for. The answers to each question required the student to express his/her level of satisfaction according to a numbered scale with five levels of choice, from "very unsatisfied" to "very satisfied". The final definition of the questions was based on the results of pilot interviews carried out on a sample of 200 students. The survey took place during the period June-July 2020, in the second semester of the 2019-2020 academic year.

Almost all students were aware of the introduction of online classes by their universities. Through a 'filter' question it was possible to ascertain that 4,124 students out of the 5,010

¹⁰ Http://www.ehea.info/.



students in the sample attended classes remotely during the lockdown period (i.e., from 10th March). The interviews on satisfaction with remote learning continued for this subset and a second filter question allowed to identify how many students regularly followed all, or almost all, the classes, and how many followed the remote classes only occasionally. Of these, 3,604 (87%) attended the classes regularly and 520 (13%) attended the classes only occasionally.

The questions asked to the students for them to evaluate online classes can be found in the Appendix with their exact wording/formulation. Here we have summarised them in the "Items" list below, in the same order as the relative questions were delivered during the interviews:

- 1. IT platform activated by the University
- 2. Internet connection
- 3. Timetable of online classes
- 4. Availability of online teaching materials
- 5. Use made of the platform by the teaching staff
- 6. Spaces at home suitable for online learning
- 7. Devices used for online learning
- 8. Ability to concentrate while attending online classes
- 9. Time management during the day (classes, study, other)
- 10. Interaction with teaching staff
- 11. Interaction with other students
- 12. Perception of her/himself as a student, even if at a distance
- 13. Overall satisfaction with online classes.

The analysis of the answers given to the various items showed a significant difference between the levels of satisfaction of those who followed the classes regularly and those who did so only occasionally/intermittently. In order to analyse the data relating to a sample as homogeneous as possible with respect to the mode of attending remote classes during the pandemic, it was



decided to separate the two groups of students. The results presented in this report, therefore, refer to the 3,604 students who regularly followed all, or almost all, online classes¹¹.

Data analysis

The levels of satisfaction with each item were numerically coded as 1 = very unsatisfied, 2 = unsatisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied. As shown in figure 1, to each question involving online classes, at least 50% of the students declared themselves "satisfied" or "very satisfied".



Both the frequency tables on online classes (Fig.1) and the descriptive statistics shown in table 2 show that the students did not differentiate much in assigning their scoring, often choosing the neutral score or the satisfied score. The high values of the means, all of them greater than 3, indicate that the students were generally satisfied with all the aspects of online classes which they had been asked to evaluate.

¹¹ The software used for the elaboration is SAS package 9.4.



Item	Ν	Mean	Std dev	Q1	Median	Q3
IT platform activated by the University	3,601	3.80	0.87	3	4	4
Internet connection	3,603	3.53	0.98	3	4	4
Timetable of online classes	3,596	3.76	0.86	3	4	4
Availability of online teaching materials	3,597	3.63	0.91	3	4	4
Use made of the platform by the teaching staff	3,599	3.64	0.87	3	4	4
Spaces at home suitable for online learning	3,602	3.71	0.91	3	4	4
Devices used for online learning	3,604	3.86	0.81	3	4	4
Ability to concentrate while attending online classes	3,602	3.34	0.95	3	3	4
Time management during the day (classes, study, other)	3,604	3.53	0.91	3	4	4
Interaction with teaching staff	3,592	3.47	0.96	3	4	4
Interaction with other students	3,588	3.34	1.05	3	4	4
Perception of her/himself as a student, even if at a distance	3,601	3.32	1.01	3	3	4
Overall satisfaction with online classes	3,604	3.55	0.82	3	4	4

 Table 2. Descriptive statistics of Online Classes Satisfaction Items

Considering the ordinal nature of the response data, the Spearman' correlation coefficients were calculated. They are all positive, thereby indicating that all the variables are pairwise associated. The levels of association vary from moderate to strong, the least moderate being the association between Item 2 and Item 11 (rho=0.19), the strongest being the association between Item 7 (rho=0.62). Moreover, all of them are statistically significant (p<0.01).

When adopting the parametric approach, hence seeing the data as they were continuous, the Pearson correlations coefficients were also calculated¹². In line with the Spearman coefficients, they are all positive, highly significant, with the strength of the pairwise linear relationships ranging from 0.17 (the correlation coefficient between Item 2 and Item11) to 0.57 (the correlation coefficient between Item 6 and Item 7). Due to space constraints, the Spearman and the Pearson correlation matrices cannot be reported here in their entirety. Instead, we can report the Spearman and the Pearson correlation coefficients between each item and the overall satisfaction.

¹² In all subsequent processing, a dataset consisting of 3,604 observations for each of the items was worked on; the missing data for each Item have been replaced with the relative mean value.



Table 3. The Spearman and Pearson correlation coefficients between overallsatisfactionand the other items

Item	Spearman	Pearson
IT platform activated by the University	0.50	0.51
Internet connection	0.35	0.34
Timetable of online classes	0.43	0.42
Availability of online teaching materials	0.46	0.44
Use made of the platform by the teaching staff	0.49	0.48
Devices used for online learning	0.38	0.36
Spaces at home suitable for online learning	0.42	0.39
Ability to concentrate while attending online classes	0.47	0.47
Time management during the day (classes, study, other)	0.44	0.42
Interaction with teaching staff	0.51	0.49
Interaction with other students	0.37	0.35
Perception of her/himself as a student, even if at a distance	0.53	0.52

The items more associated with the overall satisfaction are: perception of her/himself as a student, even if at a distance; IT platform activated by the university; interaction with teaching staff; use made of the platform by the teaching staff; ability to concentrate/focus while attending online classes.

A factor analysis was subsequently conducted to identify the latent variables that produced the outcomes, using Principal Component Analysis (PCA) as the method of extraction. In table 4 we display the first analysis outcome, with the initial eigenvalue of each component, the percentage of the total variance explained by it and the Cronbach alpha reliability coefficients.

Component	Eigenvalue	% of	Cronbach's
		total	alpha
		variance	
1	4.883	40.69	0.8535
2	1.267	10.56	0.8601
3	0.960	8.00	0.8537
4	0.763	6.36	0.8539
5	0.718	5.98	0.8505
6	0.596	4.96	0.8545
7	0.556	4.63	0.8534
8	0.499	4.16	0.8509
9	0.473	3.94	0.8525
10	0.457	3.81	0.8508
11	0.434	3.62	0.8605
12	0.395	3.29	0.8536

 Table 4. PCA - Components eigenvalues and % of variance explained



We decided to retain the first five components, even if only the first two of them showed eigenvalues greater than one. By doing so, 71.6 % of the total variance could have been explained by the factors to be obtained.

The correlation values in the PCA Rotated Component Matrix corresponding to the five components with the highest eigenvalues highlight the best partition into factors of the set of the twelve items (table 5).

		C	Compone	nt	
	1	2	3	4	5
4. Availability of online teaching materials	0.757				
5. Use made of the platform by the teaching staff	0.713				
3. Timetable of online classes	0.630			0.394	
1. IT platform activated by the university	0.602				0.519
11. Interaction with other students		0.834			
12. Perception of her/himself as a student, even if at a distance		0.715		0.331	
10. Interaction with teaching staff	0.402	0.713			
6. Spaces at home suitable for online learning			0.828		
7. Devices used for online learning			0.808		
9. Time management during the day (classes, study, other)				0.804	
8. Ability to concentrate/focus while attending online classes				0.703	
2. Internet connection					0.884

Table 5. PCA rotated component matrix

The five latent variables that describe the satisfaction with online classes (Satisfaction factors) are:

Satisfaction factor	Item
	4. Availability of online teaching materials
E1 Online teaching	5. Use made of the platform by the teaching staff
F1. Online teaching	3. Timetable of online classes
	1. IT platform activated by the university
	11. Interaction with other students
F2. Social interaction	12. Perception of her/himself as a student, even if at a distance
	10. Interaction with teaching staff
E2 Online context	6. Spaces at home suitable for online learning
F3. Online context	7. Devices used for online learning
E4 Online learning	9. Time management during the day (classes, study, other)
F4. Online learning	8. Ability to concentrate/focus while attending online classes
F5. Internet	2. Internet connection



It has already been noted that the students did not differentiate much in assigning their scores to the single items. It should be added that, also when searching for possible differences in the scoring between groups of students (e.g., by sex, age group, etc.), all the chi-square Pearson tests were nonsignificant, with few exceptions. For this reason, the classification in the five satisfaction factors described in table 6 was maintained to compare the satisfaction with online classes between different groups of students. For each group of students and each factor, the corresponding mean factor was calculated, after having placed the individual factors in a 100-point scale¹³. The choice of the 100-point scale to denote the means of the factors in the various groups is motivated by the fact that the variability of the responses on a scale of 1- 5 is small and the differences between the means of the factors in the various groups are not noticeable. Instead, with a 100-point scale, these are better highlighted. The scaled Mean satisfaction factors of the principal student groups are found in table 6.

Student characteristics			Factors means (100-point scaled)				
	n.	%	Online	Social	Online	Online	Internet
			teaching	interaction	context	learning	
Sex							
Female	2,083	58	65.1	55.1	58.5	53.2	55.5
Male	1,521	42	65.2	55.2	59.4	53.9	55.8
Age							
up to 21 years	1,879	52	65.0	55.2	58.9	53.5	55.3
22 to 24 years	1,183	33	65.3	54.3	59.0	53.4	56.1
25 to 29 years	413	11	65.2	56.1	59.2	53.5	55.3
30 years or over	129	4	65.4	58.0	57.5	54.1	56.6
Field of study							
Humanities	1,149	32	65.3	54.8	57.9	53.4	55.2
Non-Humanities	2,455	68	65.0	55.3	59.3	53.5	55.8
Enrolment year							
1 st year	823	23	65.2	55.2	59.1	53.8	55.3
Other years	2,781	77	65.1	55.1	58.8	53.4	55.7
Qualification							
Bachelor	2,202	61	65.0	55.1	58.5	53.6	55.1
Master	734	20	66.2	54.4	60.0	52.2	56.3
Single-cycle Master's Degree	668	19	64.4	56.1	59.0	54.4	56.6
Living area							
North	1,396	39	65.5	54.0	60.0	53.6	55.9
Centre	734	20	65.2	55.6	59.0	53.5	56.0
South	1,445	40	64.7	56.2	57.8	53.3	55.2

 Table 6. Student characteristics and factors satisfaction means (100-points scale)

¹³ More precisely, if x_{ij} is a generic individual score for the Factor i, the corresponding scaled score is sij=100*((x_{ij} – min(x_{ij})/(max (x_{ij}) – min(x_{ij})).



Living conditions							
Living with parents	2,441	68	65.1	55.7	58.8	54.3	55.7
Not living with parents	1,163	32	65.1	54.1	59.0	51.9	55.5
Parents highest educational level							
Low/Medium	2,313	64	65.2	55.2	58.6	53.5	55.4
High	1,155	32	65.2	55.0	59.5	53.3	55.9
Total	3,604	100	65.1	55.2	58.9	53.5	55.6

The last statistical analysis focused on the research question about the aspects of online classes that mainly influenced the overall satisfaction. For this purpose, a multiple linear regression model was set, with the overall satisfaction score being the dependent variable and the five factors being the explanatory variables. With this model, the percentage of the total variance explained was 47.5%. The results of the analysis are showed in table 7 below.

Table 7. Overall satisfaction with online classes - Multiple linear regression output

Variable	DF	Parameter estimate	Standard error	t Value	Pr > t	Standardised estimate	Scaled estimate
Intercept	1	3.54523	0.00996	355.82	<.0001	0.00000	
Online teaching	1	0.34357	0.00996	34.48	<.0001	0.41667	28.28045
Social interaction	1	0.31142	0.00996	31.25	<.0001	0.37768	25.63410
Online context	1	0.15236	0.00996	15.29	<.0001	0.18478	12.54149
Online learning	1	0.22966	0.00996	23.05	<.0001	0.27852	18.90386
Internet	1	0.17786	0.00996	17.85	<.0001	0.21570	14.64011

A useful tool to appreciate the impact of the Satisfaction factors on the overall satisfaction is the "Quadrant Analysis" in figure 2, that is the scatter plot of the pairs of values (Mean factor, Parameter estimate).





Fig. 2 Quadrant analysis - Impacts of the satisfaction factors on the overall satisfaction

The axes cross at the point (57.7, 20.0), where the x-value is the average of the five factors and the y-value is the average of the scaled parameter estimates. For the factor "Online teaching", both its mean value and its parameter estimate in the linear model are above the mean, hence "Online teaching" received the highest satisfaction and was of maximum importance. In the second quadrant, the point labelled as "Social interaction" shows that the factor "Social interaction" had also a high impact on the overall satisfaction but, in itself, students were less satisfied with it. The two points in the third quadrant, corresponding to the factors "Online learning" and "Internet", illustrate their smaller importance both with regards to the satisfaction with them and the impact on the overall satisfaction. The last point, "Online context", shows that students were very satisfied with the devices used and the space at home for online learning, but this factor had the least influence on their satisfaction with online classes.

In conclusion, of the two elements that are relevant in any higher education process, no matter the approaches adopted to realise it, namely teaching and learning, "Online teaching" appeared the first one in importance and satisfaction, "Online learning" seemed to be a critical theme.



From the university side, they implemented online classes in a satisfactory way, while from the student side, they might have had problems both with time management and the ability to concentrate when attending to online classes. The plot depicts a somehow expected result, especially with regards to the social consequences on distance education imposed by the pandemic.

Discussion and concluding remarks

Approximately 85% of the students in the Eurostudent sample followed the online classes offered by Italian universities during the COVID-19 emergency in Spring 2020. Among the students who did not follow online classes at all (about 15% of the sample), the most widespread explanation was that they were not expected to attend classes (due to the end of their studies, or because they were preparing their thesis, etc.).

The highest level of satisfaction is expressed by students enrolled in second cycle programmes (Master level), who regularly attended online classes and who had a more extensive study experience. A lower level of satisfaction is expressed by students enrolled in first cycle courses (Bachelor level) who had a shorter study experience.

Looking at the specific aspects of the online classes proposed by the Eurostudent Survey, the highest levels of satisfaction concern the technological aspects (IT platform used by the university, devices used to follow the online classes) and the timetable of online classes. Lower levels concern aspects of personal experience and relationships: concentration and attention during classes; interaction with teaching staff and other students; the possibility of perceiving oneself as a "student", notwithstanding being distant from the "normal" learning environment and from the other actors.

The results of the survey carried out in Italy appear largely in line with what emerges from other international and national analyses on the experience of students during the COVID-19



emergency (Coman et al., 2020; Doolan et al., 2021). In particular, three aspects can be highlighted: a) the centrality of the forms of organisation and delivery of distance learning for student satisfaction is confirmed; b) the insufficient availability of technological tools and adequate spaces in the home have represented an obstacle to a good learning experience; c) psychological, emotional and relational aspects of the study experience have very often proven problematic, for all students but in particular for some specific sub-groups (younger students; new entrants; students of given fields of study, and students with limited social and digital resources).

The methodology for collecting data on student satisfaction with online classes used, for the feasibility reasons that have been explained above, the standard tools used in the Eurostudent surveys for collecting data on the students' assessment of their living and study conditions, e.g. Lickert scales with five levels of choice. The analyses based on such data made it possible to achieve relevant results, some of which were published in the final report of the 9th Italian Eurostudent Survey, while further, original results are shown and discussed in this paper. It is useful to point out that these results show limits to the possibility of delving more deeply into data, e. g. achieving a better diversification of the factors' averages. The limits to the exercise carried out here might possibly be overcome by using more detailed scales, thus allowing to improve the validity of the multivariate analysis models.

The opinions and assessments of students tend to indicate that Italian universities have proven to be sufficiently capable of dealing with the emergency, rendering functional and interactive digital platforms operational, rapidly disseminating information on the new learning offer and organising sustainable class times. At the same time, the existence of a digital divide emerged, flagged by inadequate digital skills of some teaching staff and students, by the different bandwidth standards of the Internet in different areas of the country and by the possibility of having adequate tools and space in place at home.



The students clearly indicated that the learning process cannot be reduced to the mere technological and methodological dimensions. The university model that emerges from the opinions expressed by students is that of a "learning community" in which the physical presence in classrooms, laboratories and places of study, social interaction with other protagonists of university life (including the administrative staff), dialogue, discussion and critical confrontation with teachers and other students are strategic for the quality of learning and, moreover, for the growth of individual personalities (Savarese et al., 2020). This university model appears essential to create an inclusive environment and to support the acquisition of a clear identity of oneself as a student.

The Final Communiqué of the Ministerial Conference of the EHEA - European Higher Education Area countries, held in Rome in November 2020 (EHEA, 2020) indicated, among the qualifying objectives for the future of the EHEA itself, the consolidation of a student-centred learning and teaching environment, based on the principles of inclusiveness and attention to the social dimension of university life and, moreover, attentive to the well-being of students. In relation to these objectives, some recommendations can be drafted and addressed to different stakeholders.

First, it is of strategic importance to implement initiatives and define timely and effective measures to counter the digital divide that emerges from student assessments. The Digital Economy and Society Index (DESI) 2021 (European Commission, 2021) underscores, in this regard, some problem areas of the national performance in Italy: the territorial coverage of network connectivity, with the southern regions in a worse than average situation (Cesco et al., 2021), the development of digital skills as human capital and the level of digitalisation of the public sector, of which universities are a part. The PNRR - National Recovery and Resilience Plan (Governo italiano, 2021) is for this reason a fundamental tool for linking the specific objectives of the university system to the more general objectives of Italian society: digitalisation, growth of digital skills, reduction of territorial gaps and of the digital divide. The qualifying objective in this area is a national digital plan for universities (Ramella et al., 2020;



Cesco et al., 2021; Farnell et al., 2021) aimed at the development of next-generation learning environments (OECD, 2021) and training (including permanent support) of teaching staff and students in digital skills (Cesco et al., 2021).

Further actions concern the study offer of universities and measures specifically aimed at students. It is important to guarantee students the quality (Cirlan et al., 2021; OECD, 2021) and the flexibility of both the classroom and distance teaching offer (Doolan et al., 2021), with the appropriate rethinking of learning outcomes and qualifications at the end of blended study courses or with a high level of digitalisation (Cesco et al., 2021). It is important to provide for specific measures of student aid and welfare, and of counselling and guidance (Savarese et al., 2020; Doolan et al., 2021), aimed at involving and supporting students who in distance learning may be exposed to the risk of marginalisation and exclusion and students who are vulnerable to personal and environmental conditions, including the support of the development of peer-to-peer self-help initiatives.

A final recommendation is addressed to the national and international community of researchers. The monitoring of the distance learning experiences and the research on the outcomes and implications of the same were largely carried out in the first phase of the pandemic emergency with very different objectives, tools and resources in each case. It is important to overcome an episodic approach, through the coordination of initiatives and the development of methodologies and tools for detection and analysis. The goal is to network and "create a system" of the experiences implemented (Monteduro, 2020 Savarese et al., 2020; Doolan et al., 2021), lessons learned and documented good practices, also (Farnell et al., 2021) through cooperation and peer learning schemes between researchers.



Appendix

- C1. To the best of your knowledge, did your university introduce a distance learning proposition during the period of the suspension of activities due to the Coronavirus emergency?
 - Yes
 - No
 - Does not know/does not answer

CATI: go to question C2 CATI: go to question 32 CATI: go to next Section

C2. Which distance learning system was introduced?

INTERVIEWER: if the interviewee refers to a system that includes both courses with interaction and courses without, ask the interviewee to indicate the predominant modality

- Classes and teaching materials (slides, handouts, etc.) without interaction with teaching staff
- Classes and teaching materials (slides, handouts, etc.) including interaction with teaching staff (question & answer sessions, chat functions etc.)
- Other (specify): ...
- Does not know/does not answer
- C3. Did you follow the distance learning opportunities offered by your university during the period of suspension of classroom teaching activity due to the Coronavirus emergency?

- }	les	CATI: go to question C5
- 1	No	CATI: go to question C4
- Y	Yes, to begin with, then I stopped	CATI: go to question C5
- N	No, not to begin with, then I participated	CATI: go to question C5

CATI: only for those who answered "No" to question C3

C4. What were the reasons for not following classes online?

CATI: max. 2 answers; then proceed to the next Section of the questionnaire

- Preferred other learning options
- Was not required to follow classes during that period
- The distance learning platform did not work properly
- The home Internet connection did not work properly
- Did not have the appropriate (suitable) devices at home
- Different reason (specify)
- Does not answer



C5. Which subjects did you follow in distance learning mode, and how?

- All or the majority of subjects, regularly
- All or the majority of subjects, occasionally
- Only some of the subjects, regularly
- Only some of the subjects, occasionally
- Does not answer

C6. How satisfied are you with the following aspects of online classes during the period of suspension of classroom teaching activity due to the Coronavirus emergency?

CATI: for each item allow for the alternative answers from "very satisfied" to "very unsatisfied"; also allow for the option "Does not know, does not answer, not applicable"

- IT platform made available by the university
- Internet connectivity behaviour
- Timetable of online classes
- Availability of teaching materials
- Use made of the platform by the teaching staff
- Suitable space at home to follow online classes
- Devices used to follow online classes
- Concentration and focus during online classes
- Time management during the day (classes, study, other commitments)
- Interaction with the teaching staff
- Interaction with other students
- Ability to identify oneself completely with the concept of "student", even if far away from classrooms, the teaching staff and other students

C7. Taking into consideration your overall experience, how satisfied are you with the distance learning proposition offered by your university during the Coronavirus emergency period?

- Very satisfied
- Satisfied
- Neither satisfied, nor unsatisfied
- Unsatisfied
- Very unsatisfied
- Does not answer



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