

## THE TEACHER TRAINING DURING COVID-19 PANDEMIC: AN EXPLORATORY STUDY ABOUT ONLINE LABORATORIES QUALITY

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### Abstract

The spread of novel Corona Virus and the resulting Covid-19 Pandemic has had a profound impact in our lives and most of daily activities have been upset. Negative effects crushed education and all around the world schools, universities and tertiary institutions had to shut down moving to Distance Learning. Distance Learning was in fact the global answer to continue educational activities and preserve students' right to education. The United Nations Organization for Culture and Education (UNESCO) reports that ten months after rising pandemic, more than 331 million students worldwide are affected by the Pandemic and in 28 countries the schools are still closed (updated 09.12.2020). During the months of the first contagion curve, only 15% of teaching activities were delivered remotely, globally, thanks to Distance Learning. More than 1.5 billion students worldwide are or have been touched by the closure of schools and universities due to the Covid-19 Pandemic.

Teachers and instructors world-wide had to find the best solution to fix the pedagogical challenge. For this reason, teaching strategies, methods and materials have been adapted to the online learning environment. Distance Learning refers to an electronic learning environment; generally, it is used if time and/or geographic conditions do not allow a direct contact between educators and students (King, Young, Drivere-Richmond & Schrader, 2001). UNESCO (2002) asserts that Distance Learning includes learning process carried out separately in time and space, through artificial electronic or print media; this holds also for a part of the educational process. Distance Learning requires specific evaluation procedures throughout qualitative and quantitative methodologies, focusing the performance assessment and the learning process (Benigno & Trentin, 1999).

This article is a part of a wider research that wants to investigate the students' experience about online Laboratory classes during Pandemic crisis. Based on a quantitative, non-experimental and ex-post-facto research, this article specifically investigates the strategies used during remote Labs students attended during the sanitary emergency. Data was collected through a no-tested research survey administered with an online free app. A voluntary response sample from 749 Single-cycle Primary Teacher Education students, from first year course to the fifth, attending university in one of the most important athenaeums in Southern Italy, at the end of their last second semester. Results from the closed-response questions show the use of a variety of strategies whose effectiveness should be assessed based on empirical evidence.

**Keywords:** *Teacher training, distance learning, Covid-19, laboratory classes, quality.*

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### 1. Introduction

On March 11th, 2020, the World Health Organization (WHO) announced the COVID-19 Pandemic, caused by the spread of novel Corona Virus, as a public and international emergency. The COVID-19 Pandemic had been impacting many qualities of life and, the education processes. Schools shut down enforced by institutions has resulted in a rapid digitalization in the education practices. Distance Learning was the global answer to keep educational activities and preserve students' right to education. During the first months of the COVID-19 Pandemic, only 15% of teaching activities were delivered remotely, worldwide, using the only possible strategy, that is Distance Learning (UNESCO, 2020). Different Distance Learning strategies led uneven results, for which feedback is expected from specialist literature; in many cases, Distance Learning or e-Learning intensified digital divide and the Internet access. This kind of digital divide affects both the poorest and most disadvantaged countries, those where this condition is known and motivated by several problems of a social, economic, and political nature, but also those developed and industrialized countries, in which modern digital devices

remain not used to carry on teaching and learning processes (Chetty, Aneja, Mishra, Gcora, & Josie, 2017).

Online learning refers to an electronic learning environment that imposes certain responsibilities on students and teachers; in fact, the effective success of a distance learning action is strongly influenced by student readiness, learning management systems adopted, technological support and institutional commitment (Markova, Glazkova & Zaborova, 2017). There is uncertainty in the specialist literature, and this vagueness affects teachers and educators in choosing this teaching method. Devotees of Distance Learning believe that learning at distance can be as effective, or even more, than face-to-face pattern (Allen, Mabry, Mattrey, Bourhis, Titsworth, & Burrell, 2017) if content, teaching methods, communication, and learner support are considered in designing the learning project. On the other side, opponents denote concerns about students' online participation and feelings (misunderstanding, loneliness, frustration); these conditions could impact in their learning effectiveness and satisfaction (Markova et al, 2017). By reason of their peculiarities, distance learning actions also require specific evaluation procedures throughout qualitative and quantitative methodologies, focusing the performance assessment and the learning process (Benigno & Trentin, 1999). Specialist literature also refers the uncertainty about how to teach (timing or methods), what to teach, the capacity of teachers and students, the teaching environment, and the implications for education equity (Zhang, Wang, Yang & Wang, 2020). The use of Distance Learning by universities stressed concerns about the quality and the effectiveness of online courses compared to conventional educational patterns, independently from the present sanitary emergency.

Complications increase if we focus on Laboratory Instruction. In Italy, Single-cycle Primary Teacher Education degree programs provide opportunities for training with Laboratory methods, that are mandatory, to develop in the future teacher both knowledge and strategies based on students age, education, or cultural backgrounds. Ministerial Decree no. 249/10 regulates the requirements and methods of initial training for teachers which will be in service in kindergarten, primary school, and secondary school: the laboratory instruction qualifies the professional profile of future teachers, in conjunction with the disciplinary courses and the internship. The value of the practical path is expressed in the table proposed in the same Decree, which provides for the acquisition of no. 33 university formative credits (UFC) in the five years course. In future teachers training, the transition from theory to professional practice is one of the most relevant aspect (Calvani, 2011; Zecca, 2014). Pedagogical and didactics laboratories in the Single-cycle Primary Teacher Education degree program offer an opportunity to demonstrate consistency between theories and professional practices through *fading*.

## 2. Design

This study follows a quantitative, non-experimental, and ex-post-facto research design, with a survey approach, focused on the perceptions of the future teachers of primary education, about the organization of online Labs they attended, due to the sanitary emergency caused by Covid-19 Pandemic. Data was collected through a no-tested research survey administered with an online free app at the end of the second semester 2019/20, between the end of June and the first half of July 2020. The questionnaire design works on Google Form and the access link was shared to students in the official website of the Single-cycle Primary Teacher Education degree program and through students WhatsApp groups, thanks to the collaboration of students' representative. Data were collected through voluntary response sample: 749 Single-cycle Primary Teacher Education students, from first year course to the fifth, attending Labs classes at the University of Salerno, in their second semester, during the sanitary emergency. At the University of Salerno, the Scientific and Technical Committee, gathered for the crisis, decided to adopt Microsoft Teams for Distance Learning: the whole of the didactic offer have been supporting by this platform. Data collection was made thanks to an electronic, anonymous, self-administered questionnaire handed out through Google Form composed by 11 closed-ended questions and 4 open-ended questions. In this work the authors present the results of students' opinion about teaching strategies used in Distance Learning for Laboratory classes. The research question was presented as follows:

*According to your experience, what do you think about the adequacy of the following teaching strategies in online laboratory classes:*

- *frontal lecture, in synchronous modality;*
- *guided explanation, with shared exploration of tools and apps;*
- *lecture with visual support;*
- *video lesson;*
- *individual work;*
- *group or pair work;*
- *problem based learning;*
- *project learning (individual or group work);*
- *flipped learning.*

The research question was catered throughout scaling with partial semantic differential (Likert scale).

### 3. Results

The 97.5% of all voluntary sample is female. Most students are between 18 and 23 years old (64.5%); the other age groups are represented in the research as follows: 22% age group 24 - 29, 7.9% between 30 and 35 years old and, 5.6 % over 36 years. The voluntary sample well represents the different years courses of the Single-cycle Primary Teacher Education program. Indeed, Laboratory activities are planned from the first to the fifth year of course, with specific differences between pedagogical and didactics Labs. Results show that, for each year of the course, on average 20% of those enrolled in that year replied. In relation to the research questions, we believe that it is important to highlight that most of the students joined more than 1 online Labs. Precisely, 418 responding students attended 2 Labs, 119 students were present at 3 Laboratory activities and, even 32 responding students participated in 4 or more online Labs. All the voluntary sample responded the research question. The item has been proposed as follows: *According to your experience, what do you think about the adequacy of the following teaching strategies in online laboratory classes.* To the Single-cycle Primary Teacher Education students was asked to reflect on the following teaching strategies, assuming the use by the teachers in charge in the laboratory classes:

- *frontal lecture, in synchronous modality;*
- *guided explanation, with shared exploration of tools and apps;*
- *lecture with visual support;*
- *video lesson;*
- *individual work;*
- *group or pair work;*
- *problem based learning;*
- *project learning (individual or group work);*
- *flipped learning.*

Results show that students have recognized the different teaching strategies mentioned in the closed-ended question; responding students believe that frontal lecture, in synchronous modality was much used for the 39% and often used for 30%. About the guided explanation, which provide for shared exploration of tools, programs or useful apps for teaching and learning was always used for 17% of the responding sample.

Lecture with visual support (like .ppt presentation) was often used for 36% and always adopted for 21% of the students. Consistently with the results about frontal lectures, in synchronous modality, video lessons were never used for 20% and rarely proposed for 21% of the responding sample. Individual work was required by the teachers of Labs: for 32% was often commanded and, for another 32% was much required. Widely used amongst teaching strategies group and/or pair work: for 35% of the responding students, it was proposed often and for 22% it was always used. Problem based learning, despite the literature indication, was not really introduced in Labs practice in Single-cycle Primary Teacher Education program: for 28% of the responding students, it has been used often. Project learning (individual or group work) was used often for 31% and always for 23% of the responding sample. To conclude, flipped learning was rarely adopted for 24% and never for 19% of students.

### 4. Discussion and conclusion

Distance learning generally has been being a strategy for vocational learning, for working students, for non-residents or individuals in remote regions, who are unable to be present at classroom lectures, as in the poorest and most disadvantaged countries. On the other hand, distance learning has become a well-known part of the world of education in the last year, due to the sanitary emergency. The Covid-19 Pandemic has upset the lives of all of us in different ways and, it revolutionized the education sector as well as fields such as health, economy, and tourism. Many countries around the world have temporarily closed educational institutions (schools and university) to control the spread of the Novel Corona Virus. Students around the world had to quickly adapt their learning strategies, based on specific cognitive styles, to distance education application (platforms, tools, etc.) even if they had no previous or sufficient experience. Similarly, instructors and teachers world-wide had to quickly adapt strategies, methods and materials based on the new learning environment. At the University of Salerno, in the Single-cycle Primary Teacher Education program it was the first experience of online learning for all the planned activities. Research quantitative results from the closed-response question revealed, as we have

already said, that students have recognized the different teaching strategies. The percentage emerged by the analysis shows that teachers have work adapting strategies for distance Labs. Active teaching strategies were considered to differentiate the educational offer. Nonetheless, it should not be assumed that teachers' familiar with online learning environment will change easily from onsite to online learning model. In fact, despite strong points, online Laboratory class is still a challenge for policymakers, instructors, and stakeholders if the concerns about Covid-19 Pandemic will remain the same.

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