



Peer collaboration in Italy during COVID-19 pandemic: the experience of an online bottom-up backed platform designed for medical students

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Abstract

During the actual COVID-19 pandemic universities and institutions have transferred all their educational activities to mass distributed e-learning platforms, badly affecting students' interactions, limiting peer-tutoring and collaboration activities. Authors believe into the importance of these interactions in building an efficient educational pathway, valorizing what they call "horizontal communication" to be sided to the canonical "vertical" one, usually conveyed by those platforms. In this paper we report the experience of an online bottom-up peer collaboration platform named "Sciumegu", made and run by medical students themselves, active in the University of Genoa Medical School since 2007, aimed to ease students' collaborative interactions and peer-tutoring, study materials sharing and academic information transmission. Users' behavior during lockdown period has been analyzed in order to underline any difference from normality, finding that students referred much more to the platform to simulate exams (+84,98% than in 2019) and to download lectures, notes and slides (+34,20% than in 2019). This enforces the assumption that students need peer interaction to advance their academic careers and to prepare their exams in the best way, taking advantage of a digital targeted educational instrument like "Sciumegu" when those interactions are precluded. We assert this platform has filled the gap left by the educational digital step forward operated by schools and universities. In particular, "Sciumegu" responded to pandemic lockdown impositions, enforcing and promoting peer collaboration through a shared environment where to peer interact, far from traditional social media harmful distractions.

Keywords: medical education, e-learning, peer collaboration, COVID-19



1. Introduction

1.1. COVID-19 pandemic impact on global educational background

Due to the current COVID-19 pandemic, in order to contain the contagion, many countries have implemented restrictive measures to reduce gathering and formations of crowds. Universities and schools have also been affected and had to reduce their classes or to close entirely (Portale Europeo dei Dati, 2020). According to UNESCO, the closure of worldwide educational institutions affected half of the students' community (890 million students in 114 countries; Portal FGV (2020), UNESCO (2020); see **Figure 1**).

The extended closure of those institutions has significantly impacted global educational opportunities, with a massive loss in classes, human capital and diminished economic opportunities in the long-term period (Portale Europeo dei Dati, 2020).

To reduce the impact of closures, universities and schools have been looking for alternative ways to provide access to education. In particular, they have been forced to use e-learning platforms to transfer knowledge, moving all their educational activities to e-learning platforms such as Microsoft Teams®, Google Classroom®, Cisco Webex® or Zoom®, turning all classes, meetings, exams and graduations into conference calls and webinars (de Oliveira Araújo et al., 2020).

Experts warn that the impact of SARS-CoV2 restrictions over global education will reverberate much longer after the outbreak will be controlled, with negative consequences on future students' mental health (de Oliveira Araújo et al., 2020).

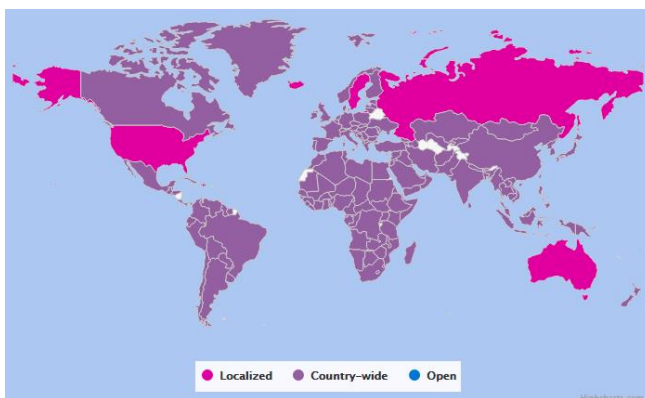


Figure 1. Global monitoring of school closures caused by COVID-19 (consulted 31th March 2020), <https://en.unesco.org/covid19/educationresponse>

1.2. What problem was addressed

Students' relationships, collaborations, real time interactions and peer-tutoring have been negatively affected by the actual distance and educational restrictions.

The current pandemic outbreak has speeded up the development of e-learning and technologies, creating the groundwork for a revolution in education. This would on one hand allow learning to be individualized (adaptive learning), on the other hand it would modify learners' interactions with each other (collaborative learning) and transform the role of the teacher (from disseminator of knowledge to facilitator of learning) (Kanneganti et al., 2020). This technological revolution has deeply changed the way we teach, as the learning dimension is now independent from the classroom as a physical place and the idea of 'community' is not function of geography anymore (Hillman and Sherbino, 2015). However, this phenomenon that we have named "The Education 3.0", is badly affecting students' interactions, limiting peer-tutoring, collaborations and real-time interactions due to pre-recorded, sometimes not interactive, lessons and ready-made study materials (de Oliveira Araújo et al., 2020). Interaction activities are important to build an efficient educational pathway, valorizing what is called "horizontal communication", i.e. collaboration between peers that usually happens outside the class. This kind of communication has to be sided to the canonical "vertical" one, where knowledge flows one way from experts to their audience (Simpson, 1959).

2. State of the art

2.1. The use of social media and e-learning platforms in global higher education

We know from the latest international literature that the use of the internet can promote students' learning, with effects comparable to other instructional methods, like conventional classes, with the advantage that all the multi-media materials can be accessed in a time and place convenient to the student (Cook et al., 2008). The ubiquity of internet and search tools like Google® changed the way education is delivered to students. In fact, traditional classes which transferred knowledge directly to their audience have been replaced by a more transversal way to get information, where sources can be compared and students have to actively filter what to learn and what to discard (Guarino et al., 2014).

A problem usually faced by universities and educational institutions is the complementarity of online tools: some of them are useful to provide study material and information, others ease student communication and peer mentoring. Peer mentoring is defined as a process where an experienced student (mentor) takes the responsibility of orientation and support of several first year students (mentees) (Singh et al., 2014). This process allows a two-way communication aimed to help younger students to deal with challenges in an efficient way (Dyrbye et al., 2005; Coates et al., 2008; Moffat et al., 2004).

Among peer mentoring tools, the use of social media

in medical education is increasingly widespread, as online tools aimed to promote collaborative learning become available (Guraya, 2016). Medical students use a variety of social media, many of them directly for specific educational purposes (Shaw, 2016; Su and Beaumont, 2010; Varga-Atkins et al., 2010). Social media are excellent platforms to real-time sharing of ideas and experiences, but also knowledge, record and resources (Deodhar & Mathur, 2019). Nevertheless, they have side effects on students' mental health, providing distractions and time wasting due to a mixture of private and professional life on the same working platform (Cole et al., 2017).

2.2. A peer-collaboration online bottom-up backed platform: the experience of the University of Genoa Medical School in Italy

The Medical School of the University of Genoa, Italy attempted to overcome all the limitations related to the use of canonical social media in education. Specifically, medical students developed a social media platform, specifically designed for peer-collaboration and mentoring purposes, named "Sciumegu", which stands for medical doctor in the local dialect (Sciumegu, 2020) (see Figure. 2, 3).

Such platform was created in 2007 and since then it is run by medical students themselves. "Sciumegu" is aimed at easing students' collaborative interactions and peer tutoring, study materials sharing and academic information transmission, through innovative and interactive instruments like polls, databases, documents and discussions (Repubblica, 2018). Only medical students can access the online platform and the mobile app; this is possible as the login interface is integrated with the University authentication system provided by IDEM GARR AAI® via Autho® (IDEM GARR AAI, 2020; Autho, 2020). Indeed, information conveyed by students is organized into courses, years and exams; also, users can set up notifications on their smartphones to be immediately up to date about topics of interest. Big importance is given to the database of frequently asked questions where students can simulate their exams asking the software to filter questions in order of importance or teacher. Within this "safe environment" users feel free to share contents, with real peer-to-peer interactions (see Appendix A).

3. Materials and Methods

Data about users' behaviour were collected via Google Analytics® service. Firstly, we looked at the number of main page views and in-page remaining time in 2019 and in 2018; secondly, we considered the period March 1st, 2020 - April 27th, 2020, extending our analysis to different aspects of the usage (main page, download page and exam simulator). This time interval was chosen as it is considered the most representative of the Italian COVID-19 lockdown period, since the Decree-Law No 6/2020 (Gazzetta Ufficiale della

Repubblica Italiana (2020a) containing the first measures adopted to contain pandemic diffusion was adopted on February 23rd, 2020. On April 26th a Prime Minister press conference introduced the "Emergency Phase n°2" determining the lockdown period end (DPCM, Marzo 2020).

Data during the lockdown period were compared to the same period of 2019 in order to underline differences in users' behavior during the "Emergency Phase n°1" period. Specifically, we compared webpage accesses and on-page staying reporting percentage differences between 2020 and 2019.

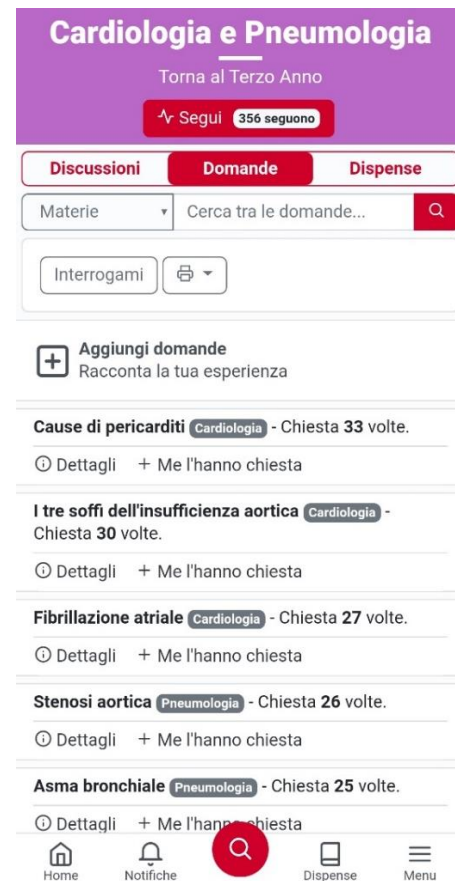


Figure 2. A "Sciumegu" exam simulator (mobile version)

4. Results and Discussion

On average, yearly usage of the website from University of Genoa medical students is similar for the years we considered. In particular, data from 2019 and 2018 (see Figure 4) show a peak of home page views during the first four months of the year, a small reduction in the following two months, then a new peak during June and July which is followed by a drop during August and a gradual increase in the last months of the year. Observing data of the two periods there is no considerable difference in page views number ($n=278.210$ in 2019 and $n=250.750$ in 2018, +10,95%) and in in-page remaining time (01:50 hrs in 2019 and 01:47 hrs in 2018, +2,22%).

This behavior is probably linked to the academic calendar of our university, i.e. the exams session are usually held in the first 4 months of the year and during the summer period, August excluded.

After showing that the general usage of the software usually follows the academic calendar, we have

analysed an eight-weeks period from 1st March 2020 to 27th April 2020 in terms of webpage access and on-page staying time and compared these data to the same period in 2019 in order to observe the presence of important differences in users' behavior likely due to COVID-19 pandemic (see Table 1).



Figure 3. A "Sciumequ" course forum page (desktop version)

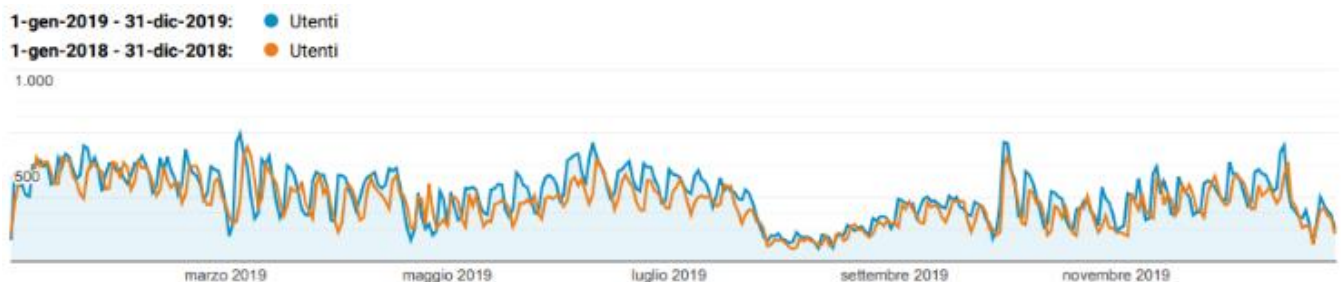


Figure 4. Home page views comparing 2018 (orange line) and 2019 (blue line). Source is from this website: www.analytics.google.com

Firstly, we observed a drop in the home page consultations ($n=34.429$ in 2020 and $n=44.217$ in 2019, $-22,14\%$), this page is very important as it is the landing page after the login process and it contains news and the general discussion forum. This phenomenon can be explained by students' general trust on the information given by the official academic, regional and institutional channels during a national emergency situations.

Then, we observed a peak in downloads number of lecture notes and slides in the first lockdown phase (1st-10th march 2020: $n=15.251$ in 2020 and $n=11.364$ in 2019, $+34,20\%$), likely due to possible future internet saturation concerns of the students.

Most importantly, we've registered a $+84.98\%$ increase

in the number of simulations ($n=1.650$ in 2020 and $n=892$ in 2019 simulations), with an increased total in-page remaining time ($n=30:28:31$ hrs in 2020 and $n=09:38:34$ hrs in 2019, $+31,64\%$).

Altogether, collected data enforce the assumption that students' behavior is changed during the lockdown period. A possible explanation of this phenomenon is that students need interactions to advance their academic careers and to prepare the exams in the best way. In other words, they seem to have taken some advantage from a digital targeted educational instrument like "Sciumequ" when those interactions were precluded and students couldn't meet physically to study together or interview each other.

In addition, our results, support the assumption that

schools and universities should assess the effects of missing peer-collaborations in education and consider to undertake corrective actions when needed (Singh et al., 2014; Durbye et al., 2005; Coates et al., 2008; Moffat et al., 2004). Our platform conveys the opportunity to develop a social media specifically targeted to educational necessities, offering embedded ready-made instruments to ease the academic career of graduate and undergraduate students. This peculiarity

should ease the problems related to having personal and university lives mixed on the same digital platform (Deodhar and Mathur, 2019).

We suggest that other professional applications like the ones we mentioned in the first paragraph should develop and improve social features and peer mentoring processes, eventually starting from this bottom-up student experience considerations.

Table 1. Principal users' behavioral findings during the period 1st March 2020 - 17th April 2020

Page Consulted	N accesses 2020	N accesses 2019	Difference %	Time on page 2020 (hh:mm:ss)	Time on page 2019 (hh:mm:ss)	Difference %
Main page	34.429	44.217	-22,14	00:06:37	00:06:53	-3,85
General download*	15.251	11.364	+34,20	00:08:06	00:04:36	+76,09
General exam simulator	1650	892	+84,98	30:28:31	09:38:34	+31,64

*Data about the 1st March – 10th March period. Source is from this website: www.analytics.google.com

5. Conclusions

In our opinion, “Sciumegu” has filled in the gap left by the educational digital reorganization operated by schools and universities to respond to pandemic lockdown impositions (de Oliveira Araújo et al., 2020). In fact, by being the first online collaborative bottom-up platform for university students in Italy, it has enforced and promoted peer collaboration by providing a safe environment where students could interact, far from traditional social media “side effects”.

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Appendix A. “Sciumegu, the smart students’ app”

Sciumegu.it was born in 2007 from three medical students’ initiative with the aim to share notes and various study materials among university students (see Figure A.1).

The first version was an online database hosted personally by one of the founders, without any social media feature.

After the huge success of the initiative, a discussion forum was added, where students were able to discuss and share precious information about their studies and exams. This happened in the pre-Facebook era and the initiative was very appreciated from the University of Genoa, which presented the project as one of the most

innovative active at that time.

The platform was awarded by the institution with a yearly economic support and the full University patronage. “Sciumegu” is actually run by medical students themselves through “Sciumegu, the medical students’ association in Genoa”. It has been recently reviewed by local newspaper a powerful tool to ease medical students’ career (Repubblica, 2018; Repubblica, 2020).

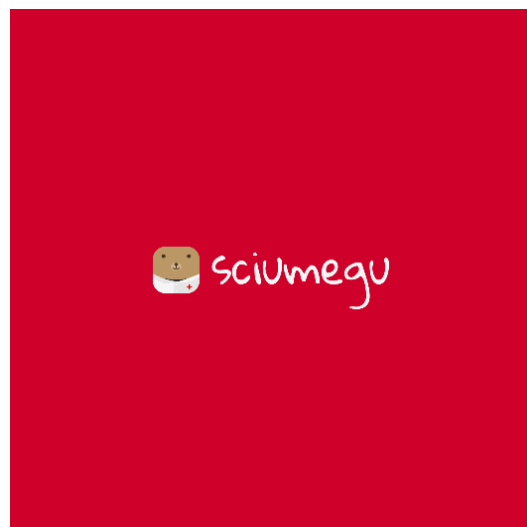


Figure A.1. “Sciumegu” logos through its history

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