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Increasing engagement and student participation in Higher Education: insights from the University of Pisa during COVID-19

Lukasz Szczygiel[1], Alessandro Iannella[2], Maria Simi[1]
[1]Department of Computer Science, University of Pisa, Italy, [2]Department of Computer Science & Educational Technology, University of Milan, Italy.

Abstract

The emergency distance learning methods adopted to face the pandemic are connected to some inherent problems which concern the lack of social aspects, interactions, and motivation. These and other frequent issues threaten to stop the opportunities offered by the widespread use of educational technology. This paper examines how the Higher Education Institutions adapted to the evolution of the pandemic, compared to relevant insights from University of Pisa gathered during the academic year 2020/21.

Focusing on the communicative and socio-emotional aspects of the didactic event, we propose engagement tools – real-time interaction applications designed to increase active learning and motivation – as a feasible solution that might tackle some of the emerged teaching-learning issues. In this context, it appears that the potential of these versatile and easy-to-apply tools has not been fully exploited. Specific teacher training actions are therefore suggested.

Keywords: *Covid-19; educational technology; engagement tools; higher education, teaching-learning process.*

1. Introduction

Since the COVID-19 pandemic spread worldwide starting in late 2019, most Higher Education Institutions (HEIs) have faced serious challenges related to the sudden shift to distance learning. So far, many empirical data and feedback have been collected, analysed, and published to assess the extent of this radical change. Consequently, new methods and practices have been proposed aiming to overcome current problems and enhance the HEIs' responsiveness. In this paper we review and suggest solutions to some of the critical issues expressed by teachers and students from the University of Pisa (UNIPI) during the academic year 2020/2021. We aim to shed some light upon the evolving situation through a brief review on the state of the art of existing literature and comparing it to the recent results gathered at our university thanks to an online questionnaire. Several studies (e.g., Cesco et al., 2021) highlight a need for a more structured approach to organisational strategies and for plans to improve the future of digital education. At this stage – after year one of the pandemic – we are interested in finding out what practices have been put in place and with what results. There have been some flaws of distance learning at UNIPI. According to our academic community, "difficulties in increasing the sense of belonging through distance learning" were the most frequently expressed issues. This refers to a lack of participation, empathy, and effective communication during the teaching-learning process. We argue that a complete return to face-to-face is not a solution to these issues. Instead, the lessons learnt during the pandemic can act as a catalyst for innovation and enhancement of Higher Education (HE).

In this work we propose a feasible solution to foster the opportunities given by educational technology without the necessity of a radical disruption of the current methods. Considering the academic context, the extensive use of frontal teaching and the presence of large audiences do not facilitate the direct interaction between teachers and learners and among the learners themselves. In these cases, an interesting and easy-to-implement solution can be the use of so-called *engagement tools*, real-time interaction applications designed to increase active learning and motivation. They are suitable for all types of learning scenarios (face-to-face, hybrid, and distance), so, once planned and methodologically implemented, they can be used in every context. To support this idea, we examine the opportunities offered by these tools.

The above leads to two research questions:

- RQ1: In the context of HEIs, how has UNIPI adapted to the evolution of the pandemic? What actions have been put in place and how they affected education?
- RQ2: Have the teachers at University of Pisa had experiences in using the engagement tools? If yes, what were their practical experiences?

2. Methods

At the end of 2021, we distributed by email a voluntary online questionnaire on the use of digital tools and the application of innovative methods in our academic community. This was part of the European funded ENLIVEN project (https://www.enlivenproject.eu). Starting from September 2021 to November 2021, we collected 911 responses from students and 119 responses from teachers. The participants were asked to give their opinions on the 2020/2021 academic year's teaching-learning experience. This method comes with some limitations, the results describe only a high-level overview of the situation, whereas in-depth studies are generally not suitable for questionnaires. The respondents were from a broad spectrum of different academic fields, from the so-called "hard sciences" to humanities and social sciences, with a balanced distribution in relation to the total sample size. The data analysis was performed using collated data from all the responses and a separate analysis was also performed to compare answers given by the teachers and the students. The most interesting results from our quantitative and qualitative analyses are presented in the next sections.

3. Higher Education and the ongoing evolution of the pandemic

3.1. Emergency learning and teaching

The pandemic struck during the academic year 2019/2020. According to Farnell et al. (2021) this phase could be defined as emergency remote teaching. It was characterised by disruptiveness and by the adoption of distance learning overnight. UNIPI, like many HEIs from different countries, relied on lockdown and other measures of social distancing to prevent the spread of the virus (Crawford et al., 2020; de Boer, 2020). These led to a large number of strategies and ad hoc approaches adopted by the universities, mainly due to their unpreparedness to an event in such a scale (Crawford et al., 2020; Dietrich et al., 2020).

The literature review frequently mentions an inherent aspect of distance learning which concerns the lack of social aspects, interactions, and motivation (de Boer, 2020). This had indeed been identified by our own research to be the most pervasive and concerning problem. Almost 60% of our students and teachers considered it a critical issue emerged during the pandemic. Many other critical aspects were also shared by HEIs, e.g., running laboratory activities and internships, increase of stress and workload and difficulties in helping disadvantaged staff and learners (Dietrich et al., 2020; Cesco et al., 2021). On the other hand, Farnell et al. (2021) and de Boer (2020) showed that the overall experience of remote education was evaluated positively. This is also confirmed by the feedback obtained at UNIPI. The research shows that the most used form of distance learning was performed using video conferencing tools (Mičunović, Rako, & Feldvari, 2022). The adoption of videoconference platforms to mimic the in-presence class dynamics – since they enabled synchronous teaching sessions – was well received. Among the main difficulties was the lack

of interaction and the pacing of the course (Dietrich et al., 2020). According to Cesco et al. (2021) the adaptation of materials and methods to distance education has been mostly left to the initiative of individual teachers. This lack of coordination and institutional support can be explained by the time constraints. These findings can be contrasted with multiple initiatives of training and support done at UNIPI where the primary beneficiaries were the teachers. In our case over 95,8% of them received some sort of support, compared to 73,3% of students (Fig. 1a). In the case of teachers, this was mostly done with informative emails (80,7%) and written information published on the institutional website (61,3%). It might be argued that some more impactful forms of help, namely, video tutorials on the use of platforms (60,5%) and online training sessions (21%), were not sufficiently offered. In particular, the latter were focused on opportunities and the paradigm of distance teaching. These would be especially important in terms of methodological changes, much needed when a course delivered face-to-face suddenly becomes mediated through digital means. It seems that, since these initiatives were open to all, but the participation was voluntary, many teachers decided to opt-out. According to Farnell et al. (2021), providing extensive and structured training for the new learning models is one of the priority recommendations.

3.2. The medium-term impact on teaching and learning

A year after the start of the pandemic new assets (primarily vaccines) and strategies have been developed to gradually adapt to the "new normality" (Cesco et al., 2021), a phase where people and activities coexist without completely renouncing to face-to-face social situations. It seems that this change of context is already visible by considering the results collected at UNIPI. In the academic year 2020/2021, only 5,2% of our students and teachers had no prior experiences with courses being delivered online, 10,5% experienced distance learning for less than a year and 84,3% had more than one year of experience. Hence, we could argue that approximately a year after the start of the pandemics, distance education is no longer a complete novelty. According to our survey, 86,4% of courses were delivered remotely and 12,6% using a hybrid model. Lastly, less than 1% were provided in presence. Since the courses were largely in distance learning, it is worrying to see that 21% of teachers have not adapted the courses' content nor the structure of teaching to the new context, 66,4% made small adjustments to fit the online mode, while 12,6% made significant changes in their teaching (Fig. 1b). A failure to adopt new methods could exacerbate the existing issues expressed by the community, namely, difficulties in increasing the sense of belonging through distance learning gained by participation, empathy, and effective communication. This problem was most frequently expressed by both students and teachers. Although distance education was generally rated positively, its duration and inherent problems may further discourage scholars and favour a complete return to traditional face-to-face education.

According to Eringfeld (2020), neither a fully online nor a complete return to face-to-face HE is desirable. Empirical evidence shows that some students that were not participative in

the physical classroom were more active when using digital tools, i.e., they used the chat to make questions (Dietrich et al., 2020; Huguet, Pearse, & Esteve, 2021). Highlighting the need for a more dynamic and interactive learning environment, Leoste et al. (2021) suggest a more extensive use of engagement tools.

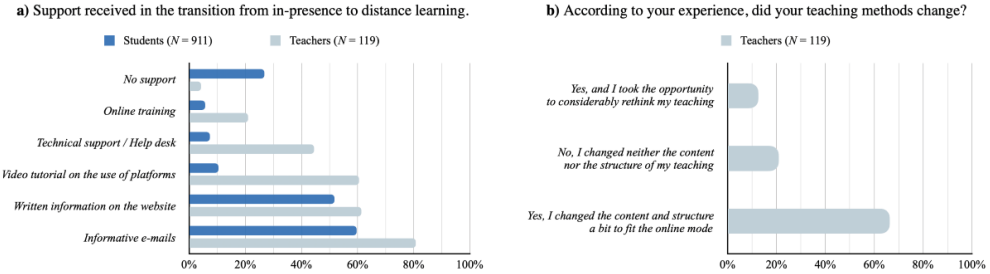

Figure 1. Survey results

4. Engagement Tools

According to Moore (2007), the teaching-learning process cannot take place without communication. The didactic event is a communicative event shaped through the ternary interaction between teacher, learners, and knowledge. It thus includes both a relational dimension between the subjects involved, and a content dimension, related to the object of communication (Sensevy & Mercier, 2007). University lectures are attended by a large number of students, making direct student involvement complex. Moreover, the shift to online teaching in many cases shows a decline in participation, empathy, and effective communication (see 3). Against this background, engagement tools can facilitate discussion, collaboration, feedback, and evaluation. They also enable the collection of qualitative and quantitative data to guide teaching and regulate its content and pace.

We distinguish between two macro-groups of engagement tools:

- Audience Response Systems (ARS), also known as Student Response Systems (SRS), enable the collection of feedback from students, and the implementation of formative and summative assessments. Examples include Mentimeter, Kahoot!, Quizlet, and various polling software.
- Collaborative tools ensure the synchronous interaction of several users and are generally aimed at the construction of shared knowledge. Examples include interactive boards such as Jamboard, Miro, Mural, Padlet as well as collaborative suites such as Google Workspace and Microsoft Office.

Lack of motivation can lead to lower learning outcomes and to a negative atmosphere in the classroom (Liu, Bridgeman & Adler, 2012). Engagement tools focus on student involvement and motivation in the teaching-learning process. They work on social-emotional aspects such

as empowerment, participation, comparison, competition, and collaboration (Humphrey et al., 2020), representing a form of educational technology intended to foster active and interactive learning (Sari, Ftriani & Saputra, 2019). They generate a safe and non-judgmental environment (Vallely & Gibson, 2018), stimulating students' attention and increasing knowledge retention (Lennox Terrion & Aceti, 2012). The anonymity provided by some of these tools, particularly ARS, facilitate the participation of shy and anxious students by consequently reducing their stress levels (Graham et al., 2007; Licorish et al., 2018). However, to prevent anonymity from flattening direct interaction, some scholars believe that these tools can anticipate activities based on dialogue and direct participation (Turkle, 2015; Moorhouse, 2017). It is risky to say whether engagement tools work overall. There is a wide variety of cases and there are many perspectives of analysis. The impact on students is not dependent on the tool itself, but on the way the teacher uses it during the didactic event.

4.1. Analysis of teachers' answers

A multiple-choice question was made to investigate teachers' use of engagement tools. Out of 119 respondents, 99 never used them and 19 did. Only 1 said the question was unclear. Answers indicate that 1 teacher used Mural, 1 Miro, 4 survey software, 4 Kahoot! and 5 Mentimeter, while 8 teachers stated others not on the list. However, 4 of these latter are not actually engagement tools (Dropbox, Google Drive, Microsoft Stream, Moodle), proving not only a lack of use of the tools, but also a lack of awareness of what they are.

Engagement tools were used by teachers who consider themselves to have high (67%) or very high (33%) digital skills, who have been using digital learning environments for more than three years (47%) or at least one year (40%), and who benefited from the university's technical support (100%), especially video-tutorials on the use of tools and platforms (93%). Although the sample is small (n = 15), these teachers are on average more digitally literate and interested in self-training than those who have not used them (+21% in high digital skills, +14% in the use of learning environments for more than 3 years, +35% in the use of video-tutorials). In addition, they claim to have only slightly modified their teaching proposal in terms of content and structure (87%) and to have used them in fully online (75%) or face-to-face (25%) courses. This may suggest that engagement tools are easy to integrate without disrupting teaching habits and confirms that they may be applied in all scenarios.

5. Conclusions

Our literature review shows some inherent issues of distance education. The lack of social aspects, interactions, and motivation may lead to reluctance in adopting future opportunities offered by educational technology. In a post-pandemic world, it will certainly be worth keeping the lessons learnt so far at HEIs. Notably, opportunities tailored to every individual, thus benefitting inclusiveness, may be empowered through an extensive and effective use of

the engagement tools. This solution is promising thanks to a limited need of investments and to the short amount of time necessary for training teachers and other actors involved in the teaching-learning process. The profile of the teachers using them suggests that it is advisable to work in general on the topic of digital literacy and at the same time to offer specific training paths, even self-directed, focusing on engagement tools. These courses should show not only the features of each tool, but also how they can be used at a specific stage of the teaching-learning process, how they can support a precise teaching or learning strategy, how they can meet specific disciplinary and/or cross-curricular learning goals and how they can be more or less suitable for a given target group.

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