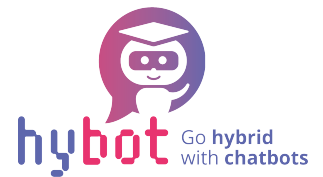




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hybot

Enhancing hybrid teaching in higher education through chatbots

Intensive Week – Techno-creative workshops at Université Côte d'Azur



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INTRODUCTION

SmartEdTech is a 90% online Master's in Science degree program that permanently offers a 10% Hybrid Learning series of workshops that focus on machine learning, fablabs, and techno-creative thinking.

GENERAL CONTEXT OF THE HYBRID TEACHING PRACTICE

- Implementer: Université Côte d'Azur (Nice, France)
- Study program: Master of Science in Technology and Education (SmartEdTech)
- Lifetime: October 2021 – February 2022 (individual case)
- Reference: Based on an interview with Pedagogical Coordinator Saint-Clair Lefevre
- Compiled and structured by Université Côte d'Azur

PARTICIPANTS AND THEIR PREVIOUS EXPERIENCE

This hybrid teaching case was implemented at the Université Côte d'Azur (UCA) within the two-year MSc degree in Technology and Education. 90% of the study program were delivered online, and 10% hybrid with a full-time modality. The hybrid teaching model was followed and implemented twice an academic year in what was called the Intensive Week Module.

Hybrid teaching has been used for this intensive week since the birth of the program in 2018 and it is still currently being used. In practice, the intensive week is usually done at a room in the faculty INSPE with a capacity of 40 people and it is doted of a videoconference screen with Zoom, a projector and a large screen, speakers, a wireless microphone cube for the audience, lapel microphones for speakers.

The pedagogical approach used is Inverted Classroom. First year (M1) and second year students (M2) plan and animate workshops together, perform hands-on activities, and are grouped by online and on-site participants to do hybrid collaboration. Normally, students have their own laptops or smartphones to stay in touch with their online pairs, but tablets can be borrowed. The physical space offers internet connection, multiple plugs, cable extensions, desks and chairs. The pedagogical coordinators act as facilitators, one monitors online participation and the other monitors on site participation (Fig. 1).

M1 and M2 participate at the same time. A total of 80 students is expected every academic year during the intensive week. 40 of them are online students, and 40 of them are on-site participants. The age average is 35 years old with an age range from 19 to 55. This program welcomes international students from every continent except Oceania with background in Education in Pedagogy, Engineering, Computer Sciences. The teachers in this program are researchers, work at private EdTech companies, have pedagogical or engineering background with specialization in innovation, creativity, instructional design, and project management.



Fig. 1: Coordinator moving the “cart cam” and facilitating microphone use (image shared by UCA).

INITIAL SITUATION

The program used hybrid teaching modality mainly because the program was always targeted to an international cohort. The program was planned to enroll international students, who often had difficulty traveling or staying in Nice. Therefore, the program allowed its students to complete their studies online with the option of assisting on site during the Intensive Week module. This module and its approach was planned to follow the hybrid teaching model before social and sanitary reasons caused by COVID-19.

CURRENT REASON

The main goal was to contribute to accessibility and equality enabling students to receive knowledge regardless of their economic and migratory circumstances.

Additionally, due to the nature of the program, doing the Intensive Week under this model showed students concretely how technology serves education. The reason to maintain the hybrid teaching model was that this way students could empirically tinker and learn with the technologies that were



taught in the program such as Robotics and unplugged activities, foster collaborative creative thinking, participate in problem solving sprint challenges, and create a sense of community that might be harder to achieve with a 100% online program.

BENEFITS FOR THE STUDENTS

The main goal was to contribute to accessibility and equality as well as to enable students to receive knowledge regardless of their economic and migratory circumstances.

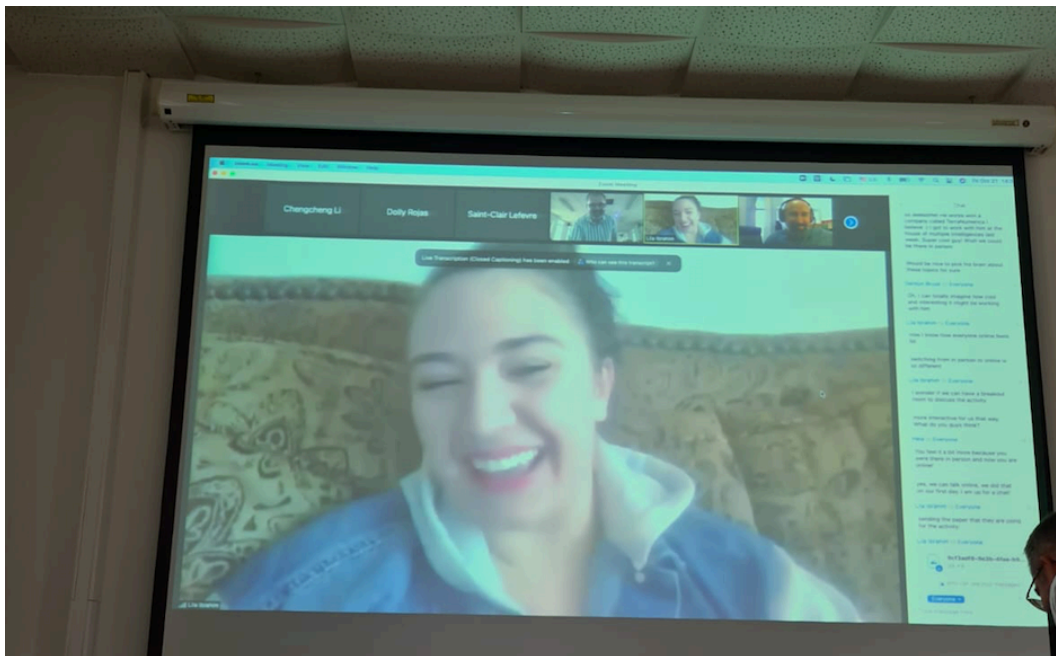


Fig. 2. An online student displayed on a projector while participating in an activity (image shared by UCA).

LEARNING OBJECTIVES

The general objective of the program was to empower students with theory and tools to propose solutions to current education problems that could be tackled through creative implementation of educational technologies. The specific objectives depended on each subject. They might vary depending on the assignments and subjects. For example, the students go through courses such as statistics, instructional design, research-oriented work, maker education, design thinking, intro to fablabs, networking, innovating pedagogy.

HYBRID TEACHING SCENARIO

During the Intensive Week, students followed synchronous courses, which the teachers conducted with a part of the students on site at several learning locations including museums, laboratories, and



research facilities. Other students were not physically present and participated synchronously via video stream or digital tools.

For the rest of the program, the courses were followed through a synchronous/asynchronous approach. The courses took place live and online but there were recordings of every class so students could follow asynchronously. Students and teachers interacted with each other synchronously and/or asynchronously, depending on the setting.

INTERACTION AMONG PARTICIPANTS

Two pedagogical coordinators were in charge of ensuring online and on-site participation. Both online and on-site students used Zoom's features on their preferred device to interact: voice, chat, breakout rooms, or web-based features such as polls, voting, and digital whiteboards. Students tended to be grouped in a mixed manner, meaning that online students were paired up with on-site students (s. Fig. 3). When these groups were made, each group member helped their online fellow participate in the activities.

It has been observed that some students would volunteer to move a smart device around the classroom to help their online classmates get a sense of the activities and create a more immersive sensation. At this point, there were no strategies to guarantee inclusiveness beyond the hybrid teaching model itself. There were no official subtitles tools, nor sign language output but students were encouraged to use Zoom's features that tackled this when needed. There was always a camera that was facing lecturers and another one that faces on-site students. No handicapped students have enrolled.



Fig. 3: On-site student interacting with online and other on-site students (image shared by UCA).



SOFTWARE AND HARDWARE USED

The **hardware** used for this practice comprised:

- a smart screen that displayed important content for the module,
- at least one smart device by student (the university provides tablets in case they were needed),
- lapel microphones for speakers and a soft foam microphone to pass around for participation,
- multiple cameras located in strategic places for online students to observe around,
- video projector with a white screen that permanently displayed online students.

In terms of **software**, the module relied on the use of official digital tools such as:

- Moodle LMS where recordings, course content, instructions, and general administrative procedure was done;
- institutional student email for formal inquiries,
- community self-managed channels like social networks, WhatsApp, and Discord.

No chatbots were employed in the program so far.

CONTENT CREATION

The content was mainly produced and/or stored in the Moodle LMS. For the instructions or main content of the LMS, H5P was used for the input of the courses. The use of authoring tools or third party software such as Miro and Mural boards, Medium to publish articles, and Canva for design were encouraged by teachers for collaboration and output of students.

ASSESSMENT

The deliverables for the workshops of the intensive week were submitted on the Moodle LMS. Students' presentations of the assignments were held in a hybrid mode through Zoom. Both online and on-site students must submit their work online, the participation was mandatory. Providing feedback was not assessed, however, at the end of the last day of the Intensive Week, there was a synchronous moment to voluntarily share thoughts and feedback regarding the entire module. Mainly assessment was managed from the Moodle LMS.

STUDENT EVALUATION

The students' feedback was collected through feedback sessions, permanent suggestion forums, and a survey at the end of the Intensive Week that aimed at gathering opinions and points to improve. Based on students' feedback, there was a general positive reaction. Although it was mentioned that there was room for improvement for online students. In particular, there were difficulties to participate in the hands-on activities (Robotics workshop and similar activities) due to the fact that the material was only available on site. Additionally, the duration of each day of the Intensive Week could be a long time to be in front of a screen (around 5 or 6 hours per day), which could be tiring for online students.



Finally, on-site students seemed to grade the hybrid practice experience higher than the online students who would prefer to be able to participate on site in the hands-on activities should they be able to do so.

TEACHER EVALUATION

It has been evidenced by the coordinator that there might be unconscious prioritization of on-site students by the teachers. Due to the highly active environment it was easy for teachers to focus on the activities being done in front of them. For this reason, the active role of the coordinators and volunteer on-site students to monitor online activity was key to get the teacher to interact with the online students.

According to the coordinator, the hybrid practice was not seamless. There was still a sensation of first instructing on-site students to perform activities and then paraphrasing the same instruction to online students. This disruption could be due to technical problems such as internet connection problems on the students' side and/or as a result of the teacher's practice.

QUALITY ASSURANCE

The quality assurance mechanisms were based on teacher and students qualitative and quantitative perception of the hybrid module. The criteria in the student survey, synchronous restitution session, and permanent feedback forum concerned quality and applicability of content, organization of the events, and general easiness to follow the module plus open ended questions that allowed students to provide suggestions. Then, these mechanisms were analyzed by the coordinators and changes were made accordingly.

TRANSFERABILITY AND SUSTAINABILITY

The model has been tested enough to guarantee that it was applicable to other careers. The coordinator indicated that it was sustainable at a meso-level as long as there was clear organization of the events, hardware and software availability, and everyone's collaboration to ensure the methodology worked properly. Also, student involvement in the logistics of the procedure as well as students' motivation to stay engaged was top priority.

TIME COMMITMENT

- general procedure planning: one week;
- equipment preparation and alternative planning in case the plan went sideways: one week;
- actual implementation: one week;
- feedback analysis for posterior implementation: three days.



HIGHLIGHTS

Intensive Weeks' content tended to offer different agendas every year. Normally, the animators were the same, teachers and EdTech organizations interested in engaging SmartEdTech students in projects, researches, and fablabs. Although some content was iterative, the MSc students have undertaken different activities depending on the year. This dynamic content in a hybrid context brings strengths and weaknesses.

STRENGTHS

- **Subject flexibility:** This methodology ensures attendance of M1 and M2 students since they know they will not go through the same content.
- **Inclusiveness:** All students can participate regardless of their socio-economic or migratory status.
- **Opportunities:** Internships and jobs are offered equally to online and on-site students.
- **Assertive communication:** The fact that there are different channels and two coordinators working full-time ensures that both online and on-site students have permanent contact with their learning process.

WEAKNESSES

Online students may be left behind during some moments, especially during hands-on activities. Online students cannot do the same activities as their on-site pairs properly. For this reason, teachers need to plan in advance several activities considering the ones that are viable to be performed in a hybrid mode and those that absolutely need to be split in different versions. Hence, lesson plans are harder to follow and instructions need to be clear so students know which activity to perform depending on the way they participate.

Moreover, it has been noted that monitoring both online and on-site students becomes time consuming and teachers need constant assistance of coordinators and well-intended students.

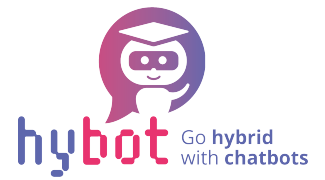
Finally, hybrid teaching relies heavily on proper equipment functioning and individual and on-site internet connection. This significantly increases the budget for successfully implementing hybrid teaching model in any classroom.

GOOD PRACTICE ADVICES

- Engage your students in the hybrid practice and assign active roles such as cameraman and chat monitor. Coordinators and teachers will have much more availability to reply to important questions if students help each other with the answers they can instantly provide.
- Keep an open microphone environment. This can mitigate online students' sensation of not being there.



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- Get a throwable soft foam microphone and connect it to the Zoom room. If someone on site wants to participate, let them raise their hand and catch the microphone. Students' attentiveness can be increased by including some type of physical activity like catch and throw.