Online Synchronous Instruction: Challenges and Solutions

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Abstract—Most of the online courses nowadays are offered in asynchronous mode, enabling students with the freedom of time and distance. Nonetheless, the drop-out rate for online courses is high. With online synchronous instruction students have both freedom of distance and punctuality of regular progress and the drop-out rate is found to be greatly reduced. However, there is a lack of online synchronous teaching pedagogies in the literature for teachers. This study aims to identify major issues that need to be considered in online synchronous instruction environments using observations of real online synchronous instruction in a physical setup. This paper then recommends some pedagogical guidelines for effective online synchronous teaching.

Keywords: online synchronous instruction; online teaching; ethological observation.

I. INTRODUCTION

Majority of the institutions use online instructional components to facilitate asynchronous learning, so that learners can undertake educational activities in their own time and space. This enables particular types of students (i.e.: working students) to attend formal education and manage their time more efficiently. However, for the people who are expected to benefit from such opportunity educational activities are typically not at the highest priority. Also, these students find themselves all alone in their learning process. This feeling of loneliness results in frustration and loss of motivation, leading to high drop-out rate [9]. Although online synchronous instruction asks students to attend the learning activities at a certain time, it continues to allow freedom to join the class from anywhere and adds the benefits of group activities, real-time discussions, social presence, and online sessions storage [4]. However, the concept of online synchronous instruction is not yet in wide use and there is a lack of best practice cases in the literature. With reference to the student-teacher interaction, a concept to be mentioned is that of the possible teacher’s cognitive load [8]. In online synchronous learning teachers are required to play different roles at the same time (teaching, classroom management, assessment, etc.). This fact may influence the quality of the teacher’s performance [5]. The presence of a facilitator can facilitate the teacher’s work especially in a synchronous cyber classroom, thus reducing the possible teaching overload [7].

In general, a traditional classroom offers many possibilities for activating students’ interaction and participation. With online learning this aspect has to be recovered through the tools of the online learning environment used. This also happens with the synchronous cyber classroom. Therefore, other possibilities offered by the platform must be exploited, such as the application of a collaborative approach, allowing the teacher to monitor the students’ interaction and participation. Moreover, the adoption of active learning modalities enables them to develop meta-cognitive skills and experience real life simulations. In this context the challenge for teachers is to acquire new professional competences and skills [1]. This paper presents an attempt to identify various pedagogical guidelines for this purpose, by the way of observing a real online synchronous instruction class. Various issues were identified by an observing group, consisting of professors and students. The findings of the
experiment resulted in various guidelines for effective online teaching.

II. SYNCHRONOUS TEACHING/LEARNING SETTING

The experience carried out concerned the delivery of an online lecture through the 3C (Collaborative Cyber Community) learning management system [2,3,6,10]. The activation of a specific synchronous cyber classroom system within the 3C context facilitated online interaction and dialogue among teachers and learners. This virtual classroom environment specifically supports synchronous learning with tools such as: video conferencing, white-board presentation, synchronized web browsing, desktop and application sharing, remote PC control, and recording file playback. The tool supporting the cyber classroom session observed was a client software, directly connecting to the Streaming Media Server (SMS) of the Cyber School System Platform (CSSP). The installation of this software on both teacher’s and students’ computers is a prerequisite to access the online synchronous session. The particular client allows to manage the main cyber session, accommodating more users during the same session. The cyber classroom also allows the creation of synchronous group discussion rooms supported by a different software, not requiring the installation of a specific client. From the end-users prospective, these different tools are an all-in-one system, with just one log on.

In the specific case observed, a simple technology was required to follow the online lecture. The teacher had a notebook and a tablet pc with touch-screen, an external webcam, a speakerphone for video conferences, and a high bandwidth network connection, with a cabled connection. The teacher was logged in with two different accounts, in order to manage the two different PCs. All the online students had a pc, a headphone and a microphone, but only some of them had a webcam; a part of the learning group was located in a traditional classroom and had a wide screen in the front wall and speakers.

III. THE OBSERVATION DESIGN AND EXPERIMENTAL SETUP

The observation experience took place in the context of an online synchronous classroom session held by a Taiwanese Professor to students in Taiwan, during his stay at an Italian University. The session involved 70 students and was conducted by the professor in Italy. The students participated online from their own locations around different parts of Taiwan. This online session was observed by a group of non-Taiwanese professors and students with the aim to identify various pedagogical approaches used during the activity. Observation was oriented according to an observation guiding framework planned in advance by the observing group, which resulted in an observation grid. The observation activity was conducted in two different rooms, one where the online session was conducted by the Taiwanese professor, and another where the online activity could be observed in online mode. In this room, discussion could take place among observing group members without interrupting the online session activities. The experience also foresaw a final discussion between the observing group and the professor.

The observation grid – The necessity to create a guiding framework for the observation activity was a premise to the development of an observation grid, based on the pre-session discussions among observing group members and the teacher. The teacher introduced the plan of the online synchronous classroom session and stated the didactic, pedagogic, scientific and methodological background of the session. The aspects identified in the discussion phase were summarized in an observation grid, which took into consideration a variety of possible methodological approaches with regard to the proposed teaching/learning process, i.e. pedagogical strategies and teaching models applied in a cyber classroom, interaction dynamics, management of the organizational setting, pedagogical changes required to adapt traditional teaching to online teaching, activities proposed in the cyber lesson, feedback from the teacher and the students. The observing group used the grid as a guide for the observation activity.

IV. FINDINGS AND DISCUSSION

The observation activity showed that online synchronous instruction represents a great opportunity for online instructors to develop new instructional models, able to promote the active involvement of online learners in the teaching/learning process. It is also an opportunity for heterogeneous, international learning groups as well as international academics to ensure effective learning. However, some aspects that are found to be effective in traditional instruction must be recreated in a virtual learning environment (or alternative strategies/methodologies have to be found), such as the (virtual) physical presence of both teacher and learners in the classroom, and the necessity for the instructor to undertake a multitude of technology management tasks, in parallel to the usual pedagogical activities. Therefore, if compared to a traditional teacher, the instructor in an online synchronous classroom session is required to develop new skills and competences. Some aspects of this challenging task are highlighted below.

- Directive Vs Interactive Pedagogical Model – Different pedagogical models have shown the importance of establishing a direct contact between learners and teachers, as it stimulates students’ thoughts and understanding, by adding body language and paralinguistic clues to communication[1]. The observation of the online session concluded that the possibility to maintain a high level of interaction and dialogue in the online pedagogic context activates students’ intellectual resources participation. In this way, even body language can be partially recovered.

- Body Language and Communication Style – In a traditional classroom, the physical presence of the teacher and the students allows for maintaining a high level of
attention. Therefore, it is able to enhance the learning potential. One of the challenges that online instruction has to face when activating online synchronous classroom concerns its capacity to maintain a clear and ‘revealing’ visual contact among the online participants and to intensify communication in e-learning. In the 3C LMS the text chat is an effective tool allowing a teacher to maintain a high level of interaction and communication with the students, strongly enhancing the teaching potential (as well as peer tutoring) in an online session. The use of the text chat allows students to ask for questions and clarifications, to highlight the key-concepts and annotate keywords, thus giving a direct feedback to the teacher, who can re-orient the lesson, should the students need it. Moreover, the insertion of music (audio element) in an online session can be useful to activate the students’ emotional sphere, which is essential to the creation of a shared pedagogic dialogue in a didactic context.

- **Composition of the Learning Group** - In this specific 3C LMS online synchronous classroom, a part of the learning group was represented by students belonging to a traditional classroom. The rest of the students were typical online students. It is important to stress some important aspects concerning the learning group: a) The students in the traditional classroom did not have their own laptop and webcam. b) They were part of a large group that could be identified as a collective entity (rather than as an individual one). c) The teacher could not observe every single member. The lesson for this part of the group was rather directive. In general, in online instruction (both synchronous and asynchronous) it is very difficult for an instructor to check whether a student is following the lesson. To do this, the instructor needs to acquire experience in decoding a student’s usual online behaviour. Moreover, the instructor is required to employ strategies to keep the students’ attention alive (for example by asking direct questions during the lesson, proposing polls, surveys, etc.).

- **Teaching Load** - An online instructor has to cope with a rather complex teaching situation, implying a remarkable teaching load. In fact, a single instructor activating an online synchronous classroom is asked to cope with many aspects, such as: the use and explanation of technical functions and functionalities (in our study, the 3C LMS), the monitoring and control over the students’ reactions in the online session by using both the webcam and the text chat, time management, coordination of the learning group and, finally, the course domain.

- **Teacher’s cognitive overload** - In the context of an online synchronous session the teacher is subjected to multiple and simultaneous cognitive stimulus (text, audio, video, whiteboard, desktop sharing, group tasks, and so on). Therefore, an instructor should have multiple competences concerning the use of technological tools, appropriate pedagogy, and the course domain. Considering the high number of activities that are required from the teacher in the online synchronous classroom, the online mode lends itself well to team-teaching. This would not only reduce the workload during the online session, but will also enrich the learning activity by facilitating multiple perspectives from different teachers (or teaching assistants).

**V. Conclusion**

The observation activity conducted in this study revealed a number of relevant aspects concerning online synchronous instruction: 1) online instruction (both synchronous and asynchronous) is to be considered as a deeply innovative pedagogic modality for its capacity to activate previously unexplored teaching/learning opportunities. Therefore, an instructor is required to develop new competences, especially concerning the use of technology and the capacity to activate and motivate e-students. 2) Online instruction is able to open up new teaching/learning paradigms and horizons due to its capacity to involve geographically wider teaching and learning communities in its didactic, pedagogic and scientific activities. 3) In online instruction the theoretical and practical dimensions cannot be separated. The observation experience also revealed further key points: (1) Monitoring of the students’ level of attention, (2) Learning group / Number of Students (Class Size), (3) Teaching load and (4) Visual presence of the participants. These issues are needed for doing further research.

**REFERENCES**


