

Online training of higher education teachers: an experience in times of pandemic

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Abstract—This article appears as an opportunity to reflect on the practice of a group of Higher Education teachers who conceived, developed and tested an online pilot course as part of an ERASMUS + KA2 project. The group of teachers and course participants, also teachers of higher education, made a very positive assessment of this work. However, there are aspects that could be improved. In future sessions, special attention should be paid to explaining the objectives of the course and the tasks to be performed by the participants, and there should also be more opportunities for interaction between the participants and between them and the trainers.

Keywords— Higher education, online training, interaction

I. INTRODUCTION

The purpose of this article is to analyze some of the data obtained within the scope of the Project ERASMUS+ KA2 “The system of support for academic teachers in the process of shaping soft skills of their students” (SoftSkills) which ran from December 1, 2018 to January 31, 2021.

The general objective of the project was to build a set of tools for the teacher of higher education, with a view to contributing to the development and promotion of the use of innovative teaching methods and the use of technologies during daily work with students, as well as to the development of new skills and improvement of the quality of work. The project also intended to contribute to creating and supporting strategies to promote creativity, critical thinking, entrepreneurship and other social skills.

In this article, we reflect on the development and testing of one of the by-products developed within the project: a pilot course created and tested by the Portuguese team.

The project was coordinated by the University College of Enterprise and Administration, Lublin, in Poland, and integrated as partners the Deggendorf Institute of Technology from University of Applied Sciences, Deggendorf, in Germany, the International School for Social and Business, in Slovenia, and the Higher Schools of Education and Technology of the Polytechnic Institute of Setúbal.

As main products, the project produced a publication (Output 1) focused on teachers' perspectives on topics related to the development of their students' Soft Skills, based on the results of a questionnaire applied to higher education teachers in the countries involved. The study also made it possible to

identify the training needs of teachers in these areas [1]. The publication can be downloaded in five different languages: English, German, Polish, Portuguese and Slovenian.

Based on the identified training needs, four course proposals (Output 2) were built with the main objective of helping teachers combine standard teaching programs with new, attractive attitudes aimed at supporting young people in the process of gaining soft skills and competences required by the labor market.

The four courses, each under the responsibility of one of the project partners, were: (i) Using modern technologies in the process of teaching of any subject (ii) Teaching how to learn - teaching through experimentation, experience and other methods activating students (iii) Shaping attitudes of innovation, creativity, critical thinking and teamwork skills during regular classes and (iv) Intercultural entrepreneurship - how to include intercultural aspects into regular classes.

The planning of the courses was done in partnership by all those involved in the project. Together, the general guidelines and methodologies to be adopted were developed. Each country was responsible for the development and testing of one of the pilot courses. The Portuguese team took responsibility for the course “Using modern technologies in the process of teaching of any subject”.

II. THEORETICAL CONTEXT

Pedagogical approaches to teaching in an online environment may differ between courses and between educators, due to different perspectives, personal beliefs, attitudes, predisposition for online teaching and the use of different technologies [2]-[5].

The importance of the course structure and the need for a systematic approach to content design is highlighted in literature [6]-[8]. Organizing the course into topics or tasks, dividing the content and providing clear information on all pedagogical and organizational aspects are crucial elements for the course design and can also facilitate participants' learning [6], [8].

One of the important aspects that stands out in the literature on online teaching is the requirement that, at the beginning of the course/module, the nature of the interaction, the necessary and detailed clarification on the expected

participation, contributions and interactions and deadlines are presented to the participants [8].

In online activities, the educator/tutor has the important role of supporting participants in the development of the learning and skills necessary to carry out the requested tasks, but not to lead or interfere in the execution of these tasks.

Participants in online collaborative activities need to feel that they relate to real people, with whom they interact online, to develop feelings of trust, appreciation and belonging to a group/community. For this to happen, it is essential to have open and meaningful communication between all participants [8].

For some authors, in online activities it is essential to share, listen, answer questions and be motivating, while paying attention to the needs of participants/students, providing guidance and actively involving students in participating in real-time or deferred discussions. (synchronous and asynchronous). In addition, the tutor must encourage the contributions of all students/participants, respecting the times of individual intervention [9].

In the study [10], it is emphasized that in online discussions there should be responsibility on the part of the teacher/tutor and the student to contribute with knowledge in the form of examples, quotes, references and ideas, thus enabling discussions or debates to take place that are richer in quality and in duration.

The interaction between the participants as well as the constitution of learning communities are considered to be key elements in the design of online learning activities [6].

Collaborative projects, discussion forums, group activities and peer discussion are essential for students/participants to interact with each other and with the content in different ways. In addition, the same authors refer to the importance of making different types of technologies available in the structuring of activities that facilitate communication and make it effective among students. The selection and availability of different tools, such as the provision of audiovisual resources or the use of discussion forums and blogs, also influence the effectiveness of learning activities [11], [17]. One of the challenges faced in online activities supported by technologies that allow written messages is the difficulty in getting students to post their messages and maintain an online dialogue with other participants. For some authors [8], [12] in order to overcome this difficulty, the role of the online educator is essential, often posting messages, managing the discussion as well as responding individually to the participants' messages. Those authors recommend that online educators maintain regular contact with participants, recognize individual contributions and include pedagogical feedback [12].

Group work in an online environment requires careful and accurate planning [3]. Students need clear, practical guidelines that support successful collaboration [11]. The use of collaborative activities will increase student interaction, which promotes social presence in the online course and allows an opportunity for students to share experiences [6], [7].

In order to facilitate online discussions, [3] a model based on: knowledge, affection and dialogue was proposed. The focus on knowledge is used to confirm, challenge or consolidate students' responses [3]. Affection is related to the development of students' awareness of their own skills,

valuing their work and their involvement. Dialogue is associated with a collaborative constructivist approach go to teach, adding new knowledge or introducing a new concept and inviting students to ask questions and answer questions. The goal is to streamline the discussion, introducing questions, highlighting contradictions or explaining different points of view, avoiding the abrupt end of the discussion.

To initiate successful online discussions, there are authors who suggest using an introductory video, or ice-breaking activities [3], [8].

The importance of feedback in online activities is highlighted by several authors. In order to motivate students/participants for learning, they should receive timely, appropriate and quality feedback on their activities. Quality feedback includes constructive criticism, praise, correcting misunderstandings and providing more information, enhancing the participant's motivation and confidence [13]. The feedback to be provided to students/participants has been facilitated by ever greater and more appropriate digital technologies [9]. For example, in the study of [8] the feedbacks provided to participants in the form of video and audio were found to be very effective in discussion forum contexts.

Identifying the appropriate technologies for specific pedagogical tasks should be a competence of the online educator [14] which helps them make decisions about the structuring of online activities. These authors emphasize the importance of communities of practice in the professional development of online educators. The benefits of these communities of practice are many, from mutual support among colleagues about the difficulties and problems they encounter in the online environment to the sharing of best practices [14].

III. METHODOLOGY

The study follows a qualitative methodology [1] inspired by the approach of the practitioner research in education, which is understood as "a systematic inquiry in an educational setting carried out by someone working in that setting, the outcomes of which are shared with other practitioners" [2]. Usually, the research is undertaken within the practitioner's own practice and can be developed by a group of teachers researchers working together, in a collaborative way. According to [3], H.E. teachers are in a privileged position to investigate their own practice. Most of them have training as researchers and have research as part of their professional functions. H.E. teachers also face complex problems in their practice that can be researched, contributing to the understanding of these problems, intervening and transforming their own practices.

The practitioner research concept is linked to the action research methodology, that is anchored in the development of researching practices on their own social contexts — a form of self-reflective inquiry undertaken by participants in their own contexts of action [4]. Although there are different schools and debates, we can use a broader perspective of action research for practitioners, interlinking action and reflection in a cyclic way.

The study was developed in different phases, following a research action approach:

1. planning of the pilot-course – organization of the 5 modules: definition of objectives, development of pedagogic

strategies, identification of resources, preparing classes and the evaluation instruments, conception of the pilot evaluation instruments;

2. implementation of the pilot-course — from June to September 2020;

3. evaluation of the course (process and results) — collection of information through participant observation, carried out by the team members during the training sessions; reflections of the trainees at the end of the training sessions; questionnaires to the trainees by the end of each module of training;

4. reflection on the effects of the course — reflections of the team members, during the process of construction and implementation of the course, and by the end of each training module; development of a global evaluation after the pilot-course implementation; analysis of the questionnaires of the participants;

5. further planning - planning of a new cycle of courses to be implemented in 2021 (still in progress).

The participants of the pilot-course are H.E. teachers, all of them belonging to the five Schools of the Polytechnic Institute of Setúbal (IPS). The registration in the pilot-course was voluntary, after the program dissemination by the official channels of the IPS.

TABLE 1. NUMBER OF PARTICIPANTS BY MODULE AND BY SCHOOL

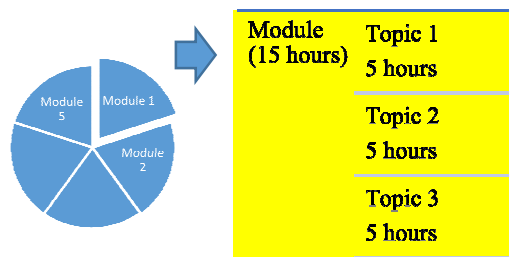
IPS School	Module 1	Module 2	Module 3	Module 4	Module 5	Total
Business	2	3	2	2	3	12
Education	4	5	5	5	2	21
Health	0	3	3	2	2	10
Barreiro Technology	4	4	4	3	1	16
Setúbal Technology	2	3	4	3	6	18
Total	12	18	18	15	14	77

IV. PILOT COURSE DESCRIPTION

The members of the Portuguese team were “conceptors” and the trainers of the pilot course “Using modern technologies in the process of teaching of any subject”.

This pilot course includes 5 independent and sequential modules. As there were no prerequisites in the modules, each trainee was free to enroll in the module(s) of interest.

Asynchronous training is composed of 2 or 3 sequential topics (picture 1), with the attendance being mandatory for all topics in the module if the trainee wishes to obtain the training certificate related to the module they attended.



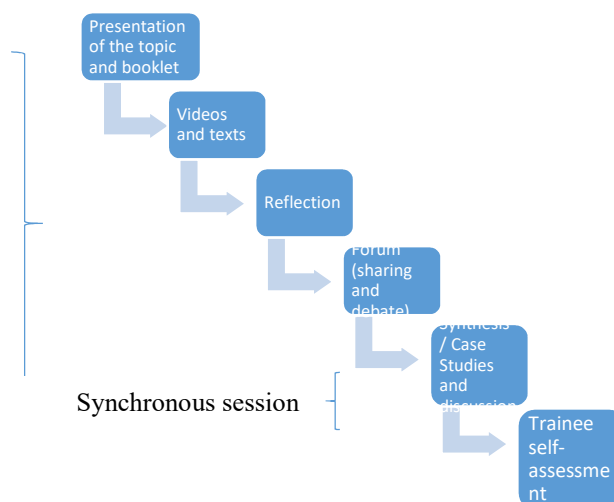
Picture 1 - Organization of the pilot course in modules and topics

Higher education teachers are the recipients of this course. They come from various schools and from different scientific areas, with very diverse schedules, which constitutes an obstacle to moments of joint training. But these teachers also have a lot of autonomy and a strong disposition for self-training and self-learning. Thus, the option for a flexible training model, centered on sharing reflections on themes relevant to their teaching practice, based on available resources, seemed to be a good alternative.

Initially, training was designed to be in a blended-learning regime, with asynchronous time (online) and face-to-face time, but given the pandemic situation and the necessary confinement, face-to-face time was replaced by face-to-face time (online), that is, at synchronous time.

In any of the topics, training started with making materials available to the trainees, through a Learning Management System (LMS). Among the materials were short videos, book chapters and/or articles, on the themes under analysis, supported by a framework and guiding trainee booklet.

Thus, in this training model, the first 3 hours of training were asynchronous, and the objective was for the trainees to carry out autonomous work: viewing the videos, reading the proposed texts and reflecting on the topic under study. In order to stimulate reflection, the trainees were challenged by questions or work proposed throughout the booklet (picture 2). The mandatory interaction with colleagues in training and the trainer had to be carried out once or more through forums (in the LMS) until the eve of the synchronous session, with the sharing of reflections and debate among the participants.



Picture 2 - Organization of topics

The 1-hour synchronous session took place after the autonomous work and was organized in 3 main axes: 1) synthesis of the theme and the materials made available by the trainer, 2) presentation of case studies and joint reflection, 3) sharing of the different perspectives and discussion on the theme and content covered in the training. After the synchronous session, the trainees had to answer a questionnaire (quiz) about the problems and the fundamental concepts addressed in the topic, allowing the trainees to carry out a self-assessment of the lessons learned. At the end of each module, each participant carried out the evaluation of the module and the trainer.

V. DATA ANALYSIS

Data analysis will be carried out according to the structure of the pilot course. Thus, the topics under analysis are: the structure adopted, the clarity of the tasks, the resources, the task to be carried out autonomously and the synchronous session.

A. The structure adopted

The first module started with an email message sent to all those enrolled in the course. In that message, participants were informed about the organization of the training, the need for autonomous work on the resources made available and the date and time of the synchronous session. Despite this message, there were participants who attended the synchronous session without having worked with the resources, because they thought training would start with a synchronous session. The novelty of a training that started with autonomous work was a factor of disturbance in this first module. This aspect was the object of reflection with the trainees “Rethink the welcome session. Keep it basic but more informative.” (Participant comment in module 1) and within the team of trainers and led to the clarification of the initial message sent in the following modules.

The sequential modules, all with a similar organization, allowed each of the modules to integrate the suggestions and reflections of the previous ones.

Throughout the training, the structure adopted was reflected on and we can conclude that it was well accepted because it allowed flexible management of the study times and work of the participants, who, being teachers of HE, are very autonomous professionals. However, there were often references to overwork that we admit are related to the temporal concentration of the pilot course. In the case of a pilot course, its organization was concentrated in just under a week per topic, which did not allow for a very flexible management of autonomous working time.

B. The clarity of the tasks

The difficulties experienced by the participants in the first module made the training team value and improve all information about the organization of each topic as well as the tasks that they should develop. The initial presentation videos of the topics are the first reading that the participants do so they should be short (no more than three minutes) and guide them on the autonomous work. The clarity of the message about the resources available and the tasks to be developed was published in the online workspace, right after the introductory videos. This stage proved to be crucial for the smooth running of the course.

C. The resources

Since there is much and varied information on the themes of the course, it was assumed that the resources made available would be selected and collected from the Internet. This option avoided a huge consumption of time and effort to build quality videos and texts, but it raised some problems. The most common problems encountered by the team of trainers were related to the availability of resources, because some were in libraries with restricted access, and to their adaptation to the context of Higher Education, because for some topics quality resources were available, yet developed for other levels of education. The amount of resources made available for each topic was also an issue raised by some participants who considered too many resources for the duration of the training “I suggest that more time should be allocated to each topic for a better assimilation of the contents by the trainees” (Comment from participant in module 2). We think that this is also related to the concentration of training in the pilot course. In module 2, the amount of resources made available was criticized by the participants “Presentations should be less focused on texts and the rest should constitute complementary readings” (Comment from participant in module 2) and reflected on by the team of trainers. It was decided to organize the resources in two groups: the main and the complementary ones; the resources that we consider very useful should be made available, without losing the focus of the fundamentals for this training.

D. The task to be carried out autonomously

Throughout the various modules, two types of tasks were adopted: some reflective on the resources made available and others for the construction of a product, in groups, which the participants presented in the synchronous session. The assessment that the participants made about the typology of the tasks is not conclusive. Some considered that the reflections required the reading of the resources and that the discussion provided by the reflections of the colleagues provided a sense of joint enterprise among the teachers of the institution. However, some participants consider that the forums, where the reflections were published, should be moderated by the trainers “Without a constant moderation, Moodle forums tend to be filled with solo inputs by the participants, sometimes without a real “conversation” (Comment from participant in module 1). As for the tasks that required group work and presentation in the synchronous session, some participants considered that it was difficult to combine times for working together, but others noted that it was an opportunity to work with colleagues they did not know, who were from different scientific areas, and that it was a contribution to the construction of a sense of belonging to the institution.

E. The synchronous session

The final synchronous session consisted of a presentation made by the trainer, as a summary of the most relevant aspects of the topic and/or a presentation of group work developed by the participants. Any of these presentations was always followed by moments of discussion in which it was sought to relate the aspects treated in the topic with the teaching practices of HE. The moments of sharing were considered by many participants to be very enriching because not only did they allow to discuss the subject matter of study in the topic, they also provided sharing of practices among IPS teachers. Some participants even suggested “thematic gathering” as a possible continuation of this pilot course.

These synchronous sessions were developed as an alternative to face-to-face sessions, due to the pandemic situation. This change proved to be favorable as it allowed participants to try an online training methodology, which was innovative for them. It also allowed gains in terms of time management, since the participants did not need to travel to participate in synchronous sessions.

Overall, we consider that the pilot course was quite successful, not only due to the reflections made by participants and trainers, but also due to the responses to the questionnaire, as can be seen in Table 2.

TABLE 2. PARTICIPANTS APPRAISAL OF THE MODULES (SCALE 1-5)

	Was the quality of the content consistent throughout the module?	How engaging would you say the overall content was?	Was the content in-depth enough?	How would you rate the overall module content?	Was the module easy to follow?
Module 1	4,1	4	4,2	4,3	4
Module 2	4,5	4,3	4,2	4,2	3,8
Module 3	4,8	4,7	4,3	4,7	4,6
Module 4	4,6	4,6	4,3	4,6	4,6
Module 5	4,3	4,3	4,0	4,5	4,4

VI. FINAL NOTES

The overall appraisal of the training seems very positive, so it was considered that this training model should be continued. The most mentioned critical aspect was the limited time available to work on the resources and develop the suggested tasks. This problem may be related to the specific context of the project in question, but it is an aspect that must be improved, increasing the duration of the course and eventually suggesting an intermediate synchronous session to promote interactions between participants.

In a training model in which participants are invited to do autonomous work based on interaction, like the one adopted in this project, the perspective of [8] was corroborated as far as the initial messages of presentation of the training and statement of the tasks are concerned, i.e., they must be very clear, yet succinct, so that the trainees understand the activities to be developed. This seems to us to be a very relevant aspect of this way of organizing training and which should be improved in future courses.

The activities to be developed in the forum should constitute an invitation to work on the resources made available and to reflect on their usefulness for the participant's personal and professional development. The moderation of the forums by the trainers should be considered, with a view to improving the interaction between the participants and contributing to the construction of a learning community [6].

The final synchronous session should arise from the continuity of the work done autonomously and should promote interaction between the participants, encouraging them to share the relevance that the topic may have in their professional practice. These moments of sharing among peers were aspects much appreciated by the participants and also

previously described [6] and [7] as a success factor in online training.

This pilot course with its various online activities contributed to overcome the difficulties inherent in the sanitary isolation in which the participants found themselves, creating conditions to develop the sense of belonging to this community.

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