

FRAMEWORK FOR PEDAGOGICAL TRAINING OF TRAINERS IN DIGITAL CONTENT FOR SELF-LEARNING (E-CONTENTS)

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Abstract

The main objective of continuing education for trainers is to promote the updating, improvement, and acquisition of new didactic and pedagogical skills that cover different fields of action, namely the design, development, and implementation of training programs in the field of research and experimentation of new approaches and methodologies applied to diversified audiences and contexts, especially in e-Learning and b-Learning environments.

To fulfill these competencies, the IEFP National Centre for Trainer Qualification (CNQF), besides managing and coordinating the training and certification system for trainers in Portugal, has been developing a modular structure for the Initial Pedagogical Training of Trainers and the Continuous Pedagogical Training of the Distance Trainer (e-Trainer) to contribute to the acquisition and development of pedagogical and technical competences of trainers that will contribute to raising the standards of quality of the training provided.

Technological innovation and evolution launch new challenges to Trainers requiring a great effort to adapt and master both from the point of view of pedagogical models and communication processes in learning environments and digital content. This new Continuous Pedagogical Training Referential in Digital Content for Self-Learning (e-Content) was designed in this context. It explores the pedagogical and technological dimensions of producing digital content for distance learning environments.

This article presents the fundamentals of this framework, its application, and validation in a case study supported by two e-Content training courses. With this case study and in a perspective of continuous improvement, we intend to understand how the modular structure of the adopted framework influences the results obtained by the trainees of the e-Content training courses and their degree of satisfaction.

Keywords: e-Learning, e-Trainer, Professional Training, e-Content, Training Referential

1 INTRODUCTION

At the level of digital transformation of organizations, the current evolution is imposing new skills, qualifications, and knowledge to help human beings adapt to different rhythms for their daily lives.

Continuing education for trainers aims to promote updating, improving, and acquiring new didactic and pedagogical skills. These skills cover different domains, namely the design, development, and implementation of training programs in research and experimentation of new approaches and methodologies applied to diversified audiences and contexts. To fulfil these competencies, the National Center for the Qualification of Trainers (CNQF) has been developing a modular structure of continuous pedagogical training for trainers organized according to a pathway focused on training trainers and e-Trainers [18].

The new generation competencies benchmarks present a diversity of categories of knowledge, skills, attitudes, values, and competencies. The technological and digital competencies that young people and adults of the 2030s should possess to integrate the increasingly global labour market stand more easily out [9]. Therefore, the current demands of society and training entities, namely of Trainers, e-Trainers, and Trainees to adapt to training processes, to the changes associated with work models and training methodologies, configure the need for access to a structured reference of information and instruction.

According to [24], the use of e-Learning and b-Learning, as an alternative and complementary forms to face-to-face training, has seen a sharp increase over the last few years, and, during the year 2020, very much motivated by the global pandemic that started in March 2020. In this context, the

Benchmark for Continuing Pedagogical Training in Digital Content for self-learning (e-Content) was designed to explore content production's pedagogical and technological dimensions for distance learning environments.

The main purpose of the e-Content Training Referential for Continuing Education in Digital Content for self-learning (e-Content) - referred to throughout this article as e-Content Referential - is to respond to the growing need for training in digital content in vocational training and, thus, to meet the demands and, mainly, the new training structures and needs due to the recent changes in the social context. The aim is to obtain competencies of *"transversal nature, of multidimensional nature, incorporating knowledge, skills, attitudes, and values that support higher-order behaviours when applied to complex situations or situations of high uncertainty"* [13]. This benchmark was designed based on the national and international recommendations of the European Union in terms of Digital Agenda 2020. This agenda presents the fundamentals of this framework and its applicability in a case study supported by two e-Content training courses to validate it. [1].

2 METHODOLOGY

2.1 Modular Framework

The organization and segmentation of the contents in the modules followed the alignment of the e-Content development cycle to bring the learning closer to the real (and ideal) implementation scenario [24]. The structure of this e-Content course consists of 4 main modules: I - Characterization of the e-Content Development Cycle; II - e-Content Specification and Design; III - e-Content Creation and Development and IV - e-Content Integration and Evaluation.

The training development provides pedagogical design support by active learning strategies and situations, objectives, target audiences, and the training contexts in which the recipients carry out their training activity. The e-Content course follows a constructivist approach, with a focus on Project-Based Learning (PBL), in which the learner conceives, designs, and develops their e-Content (Barrel, 2007), using a platform and tools suitable for this purpose [21].

This pedagogical model (PBL) is based on problems for students to acquire and integrate their knowledge, guided by teachers who appear as facilitators of the teaching-learning process (Barrows, 1986). Environments that use constructivist theory applied to educational contexts should feature the following elements: action, signification; cognitive conflict; use of prior knowledge; socialization, assessment, autonomy, and interdisciplinarity [16]. The implementation of this approach centers the learning processes on the learner (student-centered learning) - a fundamental requirement for the operationalization of PBL.

The e-Content course follows an e-Learning methodology in a virtual class environment, with self-learning and collaborative learning moments. The final evaluation (qualitative and quantitative) of the e-Content course focused on the degree of mastery of the competencies associated with this benchmark. For this purpose, the evaluation considered the access logs, the commitment and participation, the quality and assiduity of forum participation, and the creation and implementation of the e-Content.

The summative and formative assessment was carried out in an online context, considering the definition of the system, the techniques, and tools to be used in each formative moment, including the production of assessment instruments using the tools available on the platform (or in an offline environment). For example, diversified assessment strategies were used for self-learning, such as quizzes, multiple answers, and associations.

2.2 Pedagogical Model

The model used followed the e-Learning methodology, supported by a pedagogical intervention plan (PIP) oriented towards collaborative learning, with moments of self-learning [23]. This type of methodology assumes that there is a group of people committed to interacting and learning together in a perspective of the collaborative transformation of knowledge, constructed and negotiated between the elements of the community (exchanges of opinions, information, argumentation).

Interaction is the keyword of collaborative learning. It can be synchronous or asynchronous, but it should be guided by considering intermediate and final pedagogical milestones such as, for example, intermediate synchronous or face-to-face sessions, group, or individual work, answering

questionnaires, article summaries, or others. According to this methodology, trainees become familiar with the system (LMS and Course), introduce themselves to the community, study the available content, and are guaranteed remote pedagogical (and technological) support.

A pedagogical evaluation was carried out to assess and compare the knowledge acquired by the trainees in the two e-Content training courses and to collect a set of valid and reliable information. According to [19], the pedagogical evaluation of the teaching and learning process focused on. It was important to design and ensure a pedagogical evaluation of each trainee, based on detailed criteria per activity, associated with each of the course modules.

It is important to mention that this evaluation strategy was designed with this heterogeneity of instruments since the Moodle LMS is equipped with features and automatisms that facilitate the "almost" automatic execution of this evaluation (Learning Analytics). This factor considerably speeds up the entire evaluation process by the e-Trainer.

2.3 Application and validation of the e-Content Benchmark (Case Study)

The research methodology focused on the case study, which, as Stake (2005) states, consists of "studying the particularity and complexity of a single case to understand its complexity". In this context, Yin defines a case study [18] as "an empirical investigation that studies a contemporary phenomenon within the context of real-life, especially when the boundaries between the phenomenon and the context are not clear". Yin adds that multiple sources can collect evidence and information if appropriate and make it possible to understand the case.

It is also argued that this is a constructivist case study since it assumes that knowledge comes from the researcher's interpretation through a dialectical process with the social actors involved in their context of action [11]. In this sense, the relationship between the researcher and the case study has a subjective nature since "the subjective interaction will allow the approach of the realities constructed by each one" [22]. This case study was based on research instruments from a data analysis applied to two e-Content training courses and one questionnaire survey.

To validate the e-Content framework, it was decided to apply the pedagogical and technological model for two e-Content training actions, using Moodle platform (asynchronous dynamization) and Microsoft Teams (synchronous dynamization). Two research questions have been asked:

Question 1: How does the modular structure of the adopted reference tool influence the results obtained by the trainees of the e-Content training courses?

Question 2: How satisfied were the trainees who attended the e-Content training courses?

For each of these research questions, a set of methodological procedures was defined based on real facts and supported by data analysis and statistical validation (where applicable), following these topics: the operating model of the e-Content training course; the technological environment to support e-Content training; the main usage indicators registered in the training courses of this course and the pedagogical assessment process registered in these two training courses.

Finally, the process of creating, sending, recording, and analyzing a questionnaire to obtain the degree of individual satisfaction of the trainees of these two training courses.

3 RESULTS

As mentioned, the framework's validation focused on the design, preparation, execution, and evaluation of two training courses specifically prepared to be delivered in e-Learning according to the fundamentals of self-learning and collaborative learning, using the Moodle LMS and Microsoft Teams.

3.1 The operating model of the e-Content training course

The e-Content Training course presented a 60-hour effective study load program, available for one month and aimed at trainers who intended to develop distance training courses in e-Learning and b-Learning contexts. Each participant of these courses presented as a prerequisite the Certificate of Trainer Pedagogical Competencies (CCP) and the Certificate of Trainer Specialization Pedagogical Competencies (CCPE) of e-Trainer to be prepared to understand, in a faster way, the more theoretical foundations of pedagogy and andragogy inherent to this course [20].

The e-Content training course was designed according to the programmatic structure presented in the Introduction section of this paper to achieve these goals.

The development of each distance training action contemplated:

- the realization of an initial synchronous session with all the participants
- at least one synchronous session per module (interactive communication)
- the inclusion of forums/chats in each module to discuss ideas/themes, propose challenges, and help with doubts of trainees, guaranteeing that these will be answered within 48 hours (pedagogical support)
- the inclusion of technical support in the pedagogical team to clarify doubts regarding the functioning of the platform, access to resources, and use of software (technological support)

Each course module's session plan was defined with the detailed characterization of each pedagogical event, activity, and evaluation.

3.2 The technological environment to support e-Content training

One of the first challenges posed to each trainee focused on the need to make their presentation in a forum (in this case "Individual Presentations"), based on the initial presentation by the Trainers, thus ensuring the second level of interaction - the socialization of the community [23].

The course schedule area was considered relevant to activate the "alerts" functionality configured for each item. This system of alerts proved to be very useful to inform trainees about a set of course occurrences/activities through emails. For example, by email, the notification of an asynchronous session two days before it happens reminds the participants of this occurrence.

In addition to the alerts system, communication was ensured through specific announcements from the Trainer to the class in the Moodle LMS. In this case, the notices appeared during each training action and directed the trainee to be concrete and diverse cases.

Asynchronous communication is an essential component of the collaborative learning methodology, a set of message forums organized according to each module was created and configured. One of the strategies to motivate trainees' participation and continuous monitoring in Forum-type activities was the placement of different challenges and pedagogical milestones (of increasing complexity), indexed to the modules and themes under study. In these cases, it is recommended that the Trainer read all the messages sent, know who sent them, when they were sent, who read them, who responded, and finally evaluate them according to the scale proposed for this purpose.

Although it may inhibit some trainees, evaluating asynchronous communication in message forums makes them more responsible. It raises the scientific component of the contents, which are more rigorously thought out and pedagogically richer. Synchronous communication is another of the main components of this type of learning. Several audio and video sessions were scheduled for each training module, highlighting the realization of 2 sessions in the course's main modules (M2 and M3). For each synchronous session, a session plan was prepared, describing activities of the session and the pedagogical strategy to be followed in each one.

3.3 The main usage indicators registered in the training actions

As previously mentioned, the analysis of the e-Content training course focused on a set of two training sessions, held between May 2012 and July 2021, according to the dates shown in the following table:

Table 1: e-Content course training actions - dates and duration.

Course	Course Code	Start	End	Duration (days)	Duration (hours)
Digital content for self-learning	E-CONTEÚDOS - Ação 1/2021	17-May	24-Jun	26	60
Digital content for self-learning	E-CONTEÚDOS - Ação 2/2021	18-May	25-Jun	26	60

During the training process, and according to the collaborative learning methodology, each trainee had access to the content of the subjects in digital format and had pedagogical and technological monitoring via Moodle platform.

It is common to define two types of duration - one, which refers to the effective duration of the study (workload), which includes the sum of the approximate study time of the subjects and participation, and the other, which refers to the course availability time (duration between the beginning and the end of the course, typically in months, for this type of course).

From the point of view of the population in the courses, the final attendance in each of the two actions was recorded for 11 trainees out of a total of 12 initially enrolled, which represents an average attendance rate of 92%, a high value in adult vocational training contexts, given in e-Learning and b-Learning.

Table 2: Participation rate in e-Content courses.

Course Code	Registere	Finished	%
e-Contents - Course 1/2021	12	11	92%
e-Contents - Course 2/2021	12	11	92%

Considering the course program and its pedagogical objectives, a set of pedagogical communication and assessment tools was adopted for each training action, used, and adapted to each module (23 pedagogical milestones in total).

From the reports area, available in Moodle, a set of very useful information is extracted to verify the participation strategy of trainees and trainers. The following table summarizes the different views in each training action's activities.

There are many views in asynchronous message forums, emphasizing access to forum two and forum 3 with averages over 50 per participant (with a maximum of 86.1 per participant in the forum of module 3 of action 1). There was also significant access to the assignments and multimedia content and the storyboard examples presented by the trainers.

If we analyze the messages sent, there is a high number of messages read, which indicates a repeated reading of the information contained in the messages, which may prove one of the advantages of asynchronous participation in the forum, which is linked to repeated reading for the study of the subjects and thoughtful answers with more time.

Table 3: Activity log (views 11 trainees + 3 trainers).

Module 0 - General	Course 1	Course 2	Course 1 / 14	Course 2 / 14
Course announcements	143	139	10.2	9.9
General course forum	418	396	29.9	28.3
Individual presentations	463	279	33.1	19.9
Course guide	64	40	4.6	2.9
Schedule	10	14	0.7	1.0
Module 1: Familiarisation, concept and context	Course 1	Course 2	Course 1	Course 2
Module 1 forum	660	784	47.1	56.0
Module 1 manual - Familiarisation, concept and context	67	59	4.8	4.2
Evaluation Test - module 1	598	407	42.7	29.1
Module 2: Specification and design	Course 1	Course 2	Course 1	Course 2
Module 2 forum	1041	932	74.4	66.6
Module 2 manual - e-Content Specification and Design	55	39	3.9	2.8
Template storyboard Module 0	38	46	2.7	3.3
Template storyboard Module 1 (example)	48	40	3.4	2.9
Assignment 2 - Storyboard part I	345	477	24.6	34.1
Assignment 3- Storyboard part II	380	282	27.1	20.1
Module 3: Creation and development	Course 1	Course 2	Course 1	Course 2
Module 3 forum	1205	718	86.1	51.3
List of UFCD Project	106	105	7.6	7.5
Module 3 Manual: Creation and Development	27	22	1.9	1.6
H5P Manual (example)	12	22	0.9	1.6
Example: Storyboard creation (unit 1)	114	99	8.1	7.1
H5P activities (video tutorials)	184	164	13.1	11.7
Module 4: Integration and Evaluation	Course 1	Course 2	Course 1	Course 2
Module 4 forum	540	160	38.6	11.4
Final Work/submission	219	123	15.6	8.8

Fig. 1 shows an evolving graphic illustration with the contributions of the different trainees and trainers for each training action:

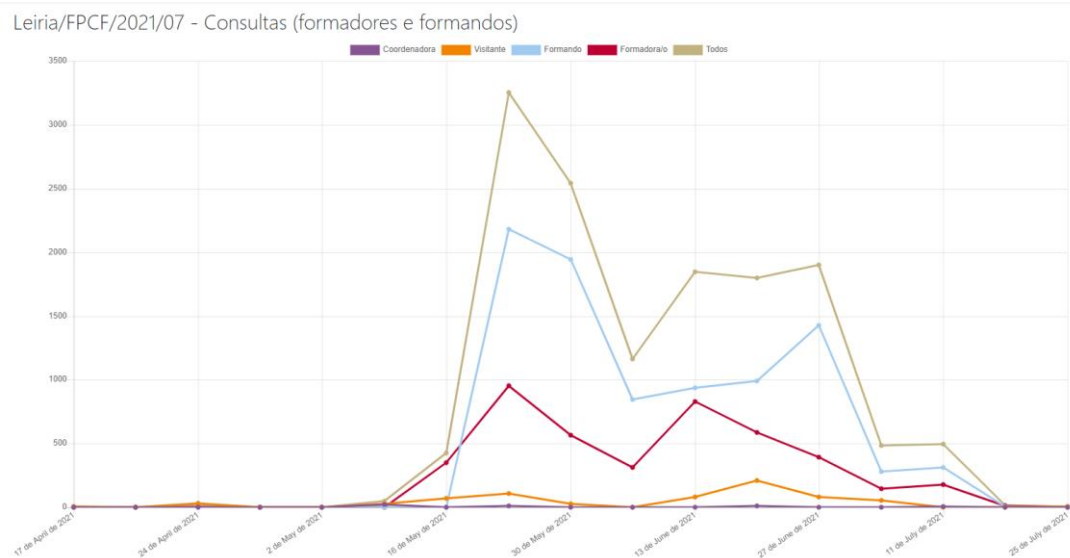


Figure 1: Activity log (contributions and consultations from 11 trainees + 3 trainers).

From the graph presented, we can see a significant increase in activities (queries and contributions) at moments close to the delivery of the work of each of the training action modules, namely the delivery of each storyboard and the delivery of each multimedia content, using the H5P tool developed by the trainees. It was also found that there is a very similar attitude between the two classes of each training action, motivated by the homogeneity of the participants, all of them with training functions in the IEFP and fulfilling the prerequisites for access to the course.

3.4 The process of pedagogical evaluation recorded in the training actions

The pedagogical evaluation process of each e-Content training session focused on a set of challenges and individual assignments, differentiated, and indexed to the pedagogical objectives of each module, and participation throughout the training session.

A set of rigorous criteria for each evaluation parameter was defined and adapted to each challenge and assignment.

Analyzing the results of the pedagogical evaluations, the main pedagogical results achieved by the 22 trainees were very positive (there were 22 positive evaluations, which represents a success rate equal to 100%).

The final average evaluation reached 4.7 for action 1 and 4.43 for action 2, which shows that the 22 trainees obtained a very assertive final evaluation, thus achieving the pedagogical results defined for the e-Content course.

The availability of the evaluation criteria and sub-criteria to all trainees allowed for very positive reactions, with no complaints or approaches to possible injustices.

Although it may have flaws (like any pedagogical assessment process), this assessment methodology minimizes the difficulty of distance assessment, whether for individual assignments, the challenges, the online assessment test, or the final simulation.

However, this strategy has a disadvantage related to a demanding time attendance of trainers, requiring a high effort and dedication to monitor and evaluate each trainee. Some trainers consider this characteristic one of the limitations of this methodology, which sometimes makes this type of approach unfeasible in vocational training contexts, especially when several training actions are being carried out simultaneously.

3.5 The process of creating, sending, recording, and analyzing a questionnaire to obtain the degree of individual satisfaction of trainees

A questionnaire survey was developed to assess the evaluation and validation of the adequacy to the expressed objectives of each training activity, as well as the level of individual satisfaction and the trainees' perception of each training event,

The process of creating, sending, recording, and analyzing a questionnaire adapted to collaborative learning and the level of individual satisfaction of the trainees of these training events followed the scientific rules of [15] and [10]. The questionnaire was available to 22 trainees registered in the two e-Content training courses.

The questionnaire was divided into 4 groups, with a total of 107 questions to obtain the answer to the mentioned objectives:

- Group I: Identification - Consisted of personal identification questions such as gender, education, and experience.
- Group II: Training Course - Consisting of questions and statements about the pedagogical objectives, course program, and workload per module.
- Group III: Development of the training - consisting of questions and statements about the satisfaction of the trainee with the development of each module in terms of organization, theoretical content, activities, interaction, synchronous and asynchronous learning environment, Moodle LMS, H5P tool, practical application, and evaluation of the e-Trainees.
- Group IV: Overall evaluation - Consisting of questions and statements on the overall and general evaluation of the training and on comments and suggestions from each trainee.

The choice of closed-ended questions was quick to answer, allowed the collection of objective data, and are suitable for statistical treatment of the answers. However, an open-ended question was asked for comments and suggestions in the end.

In this questionnaire, we used a Likert scale of the agreement, from 1 to 5, being 1 "strongly disagree" and 5 "strongly agree" and having the option N/A for when the situation did not apply.

According to Evans and Mathur, the online questionnaire came to enhance data collection because it has several strengths such as global reach, flexibility, speed and timeliness, technological innovations, convenience, ease of data entry and analysis, question diversity, low administration cost, ease of follow-up, controlled sampling, large sample easy to obtain, control of answer order, required completion of answers, go to capabilities [18]. Despite being a questionnaire that encompasses several areas in the construction and validation of the instrument, we tried to reduce as much as possible the time for completion.

3.5.1 Group I: Identification

As mentioned, the Continuing Pedagogical Training in Digital Content (e-Content) actions for self-learning took place between May 24, 2021, and June 29, 2021. There were 22 trainees in action, but only 14 (61%) responded to the online questionnaire about the action. Of these 14 participants, 78.6% (11) are female.

The participants are mainly college graduates, with 11 having a bachelor's degree (78.6%), 2 having a doctorate, and 1 having a master's degree. All the trainees who responded to the questionnaire stated that they had already had experience in online education/training.

3.5.2 Group II: Training Course

When asked about the evaluation of the programmatic objectives, the participants scored as well to very well defined. In the evaluation of the action program, all modules obtained very positive ratings (ranging from good to very good). Like the previous item, only one participant rated the definition of the course objectives as reasonable.

From the analysis of the table, it can also be seen that M2 - Specification and Design was the module that had the highest "very good" rating, reflecting the importance and the need to have a pedagogical part before the practical part of the course regarding the storyboard construction.

The workload for each module was also one of the items identified for the participants to evaluate. The total of the answers shows that the participants, in general, are satisfied with the workload assigned to each module, but 2 respondents classify it as "reasonable" (see the following table). This rating is because the pilot actions took place for only one month.

Table 4. Evaluation of the content and modules.

<i>Module</i>	<i>Insufficient</i>	<i>Sufficient</i>	<i>Reasonable</i>	<i>Good</i>	<i>Very good</i>
Module 1: Context and e-Content Concept			1	4	9
Module 2: e-Content Specification and Design			1	3	10
Module 3: e-Content Creation and Development			1	5	8
Module 4: e-Content Integration and Evaluation			1	5	8

According to the respondents, the sixty hours of the action should be extended over about two months to allow participants a greater investment, not only for creating the storyboard but also a better exploration of possible tools capable of putting it into operation on the platform.

3.5.3 Group III: Development of the training

About the development of the action, each trainee was asked to evaluate a set of aspects on their satisfaction with the development of each module in terms of organization, theoretical content, activities, interaction, synchronous and asynchronous learning environment, Moodle LMS, H5P tool, practical application of the training, and evaluation of the e-Trainees. Only "resources provided and technical support" was rated as reasonable by 1 trainee. All other items obtained evaluations between "good" and "very good". This evaluation is because only the H5P was used, as an authoring tool, during the three pilot actions.

Table 5. Evaluation of the action's programming.

	<i>Insufficient</i>	<i>Sufficient</i>	<i>Reasonable</i>	<i>Good</i>	<i>Very good</i>
Organization and presentation of the training				4	10
Theoretical content provided				3	11
Proposed Activities/Exercises/ Challenges				4	10
Interaction between e-Trainees and e-Trainers				4	10
Asynchronous Learning Environment (Moodle platform)				4	10
Synchronous Learning Environment (Teams platform)				3	11
Content development tools (H5P)				7	7
Resources provided and technical support			1	3	10
Pedagogical evaluation of e-learners				3	11
Practical application of knowledge acquired				4	10

3.5.4 Group IV: Global Evaluation

Finally, the trainees made a global evaluation of the actions, consisting of a question of a global nature and about each trainee's comments and suggestions for future training actions.

The result was 100% (corresponding to the total number of answers: 14), which indicates overall satisfaction with the course that met the expectations of all trainees. At the end of the questionnaire, a field was opened for the e-Trainees to express their comments, suggestions, criticisms, or experiences. The following comments were obtained about the structure of the course: "I think the course is well structured" and to the Moodle platform: "Moodle sometimes lacks a more precise way of indicating whether or not each stage has been completed, leaving us with the doubt as to whether any of the proposed actions have not been completed, and if so, which ones".

One of the participants also suggested: *"This course is quite demanding in terms of time and, of course, of the quality of the work to be presented/conceived and, therefore, it is difficult to reconcile it with an intense and irregular work schedule, like mine. I suggest, then, that the interval between synchronous sessions, in which we present our work, should be 2 weeks to allow us to test the digital tool(s) and carry out a simulation (UFCD on Moodle) with better quality and completeness. In my opinion, this would not necessarily imply more time in the course. The definition of pairs also seems*

relevant to facilitate the testing of what we are building, and, in this way, we can "fine-tune" more quickly and easily the final result".

4 CONCLUSIONS

For this case study (e-Content training courses), the pedagogical model focused on the e-Learning methodology with moments of collaborative learning and self-learning. The pedagogical framework of the e-Content training course is based on practical experience resulting from participation in R&D projects and based on the development of training courses for e-Trainers in which this training need was detected.

A community-oriented pedagogical intervention plan was implemented, with a training environment centered on the concept of communication in virtual learning environments, often moderated by Trainers with specific skills to perform this function. Two research instruments were analyzed, namely the questionnaire that focused on the degree of satisfaction by collecting the individual opinions of 14 trainees. The data analysis on the dominant characteristics of the trainees and the pedagogical evaluations of 22 trainees enrolled in the e-Content training courses.

From the point of view of the population in the courses, the final evaluation of the 22 trainees was recorded, representing a high success rate equal to 100%, a high value in adult professional training contexts given in e-Learning [14]. The answers to the questionnaire showed that the e-Learning methodology implemented met the proposed objectives has been very well accepted by most of the trainees enrolled in the two e-Content training courses. The synchronous and asynchronous communication tools available in each course, such as the forum, notices, alerts, and presentations, were well accepted and widely used by the trainees and helped to achieve the pedagogical objectives.

The collaborative learning process was well evaluated and validated by many trainees, with a need to invest in the dynamics of group work (two by two, at least) and participation among trainees. Time management, especially the duration of availability of each of the activities, was one of the themes mentioned by most trainees, which indicates a need to increase the time (spacing) of this theme in the schedule of each training action.

The guarantee of daily pedagogical support was essential, especially about using the content development platform and its integration into Moodle. The form and strategy of the evaluation were referred to as assertive, with well-defined criteria and the percentage weight of each. They pointed out that no evaluation guidelines were published. However, rather they opted for individual evaluation on the Moodle platform.

The absence of a mechanism for monitoring and verifying the activities carried out and to be carried out was highlighted, leaving the need for better use of the Learning Analytics functionality that Moodle provides. It was suggested to include another week to deal only with the introduction to the H5P development tool and its main features to help in the pedagogical design of each content and facilitate its use for the creation of more interactive differentiated digital activities.

The inclusion of a set of demonstrative videos of the H5P tool was another subject that was an asset to help trainees in modules 3 and 4. The theoretical-practical approach followed as a pedagogical strategy by the trainers was considered essential for an understanding and justification of the final work.

Overall, it can be concluded that the pedagogical evaluation of the e-Content courses, according to the methodology presented, can be considered as quite positive, which allowed verifying the effectiveness of the design and validation of this referential of continuing pedagogical training of trainers in digital content for self-learning (e-Content).

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