

Research Article

Trainee Perceptions of Instructional Design in Continuous Online Training and Learning Transfer

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The aim of this study was to analyse how a continuous online training course was designed to foster learning transfer and participants' opinions regarding the design properties themselves, in order to then identify how far these perceived and valued elements allow them to transfer the learning from the course themselves. After determining deductive categories from previous studies, a qualitative analysis of the three data sources was performed, namely, those originating from the guidance documents for the analysed course, as well as a reflective training activity and interviews with the subjects. With the help of the NVivo software and its triangulation, we then determined that the course was indeed designed to foster transfer and that its evaluation by course participants and the incidence of the design elements remains the same regardless of whether the content has been transferred or not. This confirms the general theory that when a course is well oriented towards fostering transfer, even in the context of continuous and online ICT training for teachers, it enables the transfer of immediate learning, especially when emphasis is placed on training activities that reflect on practice.

1. Introduction

Given new permanent teacher training trends and models, which entail the incorporation of technologies into teaching practice, including digital skills and processes of innovation and change [1], and especially amid the huge rise in the number of online courses, it is essential to determine the learning transfer process that takes place in this mode of training.

Specifically, studies on transfer—which refers to trainees' effective and continuous application of the knowledge and skills acquired during training—indicate a direct relationship between the profile of the learner, their work environment, and their learning and, in turn, a relationship between the latter and the design of the course [2]. Therefore, a well-designed training course must be one that is considered to ensure quality of training and attention to the needs of trainees and their work context on the one hand, while constituting the most conducive field of intervention for trainers to improve learning transfer on the other.

Thus, studies on transfer can also help course designers to improve training based on evidence of the transfer achieved with participants [3]. The aim of this study was therefore to analyse how a continuous online training course was designed to foster learning transfer and, based on evidence of their learning, gather participants' views on the design properties themselves to use this information in the design of new training strategies.

In addition, this study also allows us to look into the subject in greater depth, expanding the results of other research on the transfer process, but focusing on this newer research context of an online permanent training course aimed at equipping teachers with digital skills.

1.1. Theoretical Framework

1.1.1. The Concept of Learning Transfer. The concept of transfer, according to the study by Baldwin and Ford [4], can be determined as the degree to which students successfully

and continuously apply the knowledge, skills, and attitudes acquired from a training course [5–9]. In other words, the study of transfer means finding evidence of the new skills and knowledge acquired in teacher training being applied in an adapted and flexible way to the situations faced in work environments [9].

Although an old one, the theoretical basis for the concept of transfer has been identified in the most recent and relevant research in the field [3,5–9]. According to these researchers, a transfer can be explained in terms of inputs and outputs, while it also implies two conditions. The inputs are those factors related to the characteristics of individuals, the characteristics of the training design, and the work environment; and the outputs are learning outcomes and retention [10].

Regarding the two conditions, the first is a generalization, that is, the effective application of learning in contexts or situations other than the scenario in which they were acquired; and the second would be maintenance, understood as the change resulting from the learning experience that persists over time [5, 6].

As mentioned earlier, the theoretical model developed by Baldwin and Ford [4], which constitutes a seminal work in empirical studies on transfer [3, 5–9], establishes three sets of inputs that can stimulate or inhibit the learning transfer process and are used in research: the design of the training, aspects related to individuals, and the latter's work environment. From this, we can easily deduce that paying attention to design is relevant insofar as it is the only one of the three inputs that trainers can take into account to improve the transfer of learning, since the remaining two inputs are not within their control.

1.1.2. Design of an e-Learning Training Course Aimed at Fostering the Transfer. In the field of online teacher training, Egan [11] takes as a starting point the plausible assumption that education professionals should be particularly skilled in applying what they learn in continuous training to their (teaching) work practice. However, for reasons beyond their control, such as the conditions of their work environment or deficiencies in the design of these learning experiences, in their attempts to orientate their work towards the principles on which transfer is based, they can neutralize those a priori conditions favourable to it. In this respect, conclusions posited in theoretical reviews on transfer studies are of particular interest, since they indicate that the design of training, related to training material, needs analysis and learning goals, as well as being able to exert a huge influence on this process [5].

The most appropriate course design for transfer considers the evaluation of teaching methods, content, and learning practices and seeks to improve learning outcomes and competences based on the objectives of both the students and the institutions to which they belong [12], thus providing more authentic and personalized learning paths.

For Rivière et al. [13], learning outcomes should be taken into account in the course design, since the context, that is, the trainees' environment and physical, social, and cultural

resources, gives meaning to learning. Therefore, for skills and knowledge to be transferrable, they cannot be acquired without taking their context of use into account, which is why it is essential to know the profile of the trainees taking the course and adapt the contents to their interests and needs.

Regarding the didactic approach, a determining aspect for the acquisition of competences and their subsequent application, a student-centred approach can favour greater transfer [10,14]. Following this same logic, it is important to consider trainees as agents who must be aware of their learning processes [15] and of how their data will be used to continuously improve course resources and the learning management system [12].

Therefore, the transfer can be supported by integrating reflection activities on trainee practices [2,7,16]. Strategically dispersed throughout the course, these enable the use of newly acquired skills and knowledge [14].

Similarly, Cano [2] and Schwartzman et al. [17] pointed out that a high number of practice elements in training sessions also represent a high probability of transfer. In this respect, relating the new knowledge to its possible applications, linking the course material to prior knowledge, and identifying work situations to apply lessons learnt are actions that favour transfer.

Another strategy is to propose follow-up activities [7,16]. This would include, for example, peer tutoring and discussion forums, which help teachers overcome difficulties in implementing what has been learnt. In this regard, it is also important to note that the technologies available in online training facilitate and accelerate this process [7,16,18].

For their part, Noesgaard [19] and Yun et al. [20] emphasized the relevance of designing activities that address emotional aspects aimed at, for example, enhancing motivation and self-regulation and valuing the efforts of students in the process of change in their teaching practices through feedback from activities, thereby improving their confidence with regard to transfer.

Additionally, since it is clear that online learning requires a higher level of independence, trainees must become actively involved in the course content and with other people on the course, resulting in a higher level of participation and autonomy [14].

Transfer in online training is also favoured through dialogue between trainers and trainees and collaboration between trainees [14, 21]. In distance learning, the tutor has the role of advising, guiding, and motivating participation, interest, and reflection through the dialogue carried out throughout learning and in follow-up activities [18]. It is therefore essential that tools be provided to promote collaboration in online environments.

Finally, Quesada-Pallares et al. [22], Martins et al. [23], and Testers et al. [3] indicated that actions to improve transfer in online training should be more oriented towards meeting the needs of the job, linking the training more with participants' working reality. This factor is also due to students being motivated to quickly apply the knowledge from the course in the workplace once they are interested in acquiring skills that promote professional development [12].

As an overview of all of the above, we have attempted to summarize the main ideas in the concept map represented in Figure 1.

2. Materials and Methods

Taking the above as a starting point, the initial aim of this article was to analyse how a continuous online training course was designed to foster learning transfer and participants' opinions regarding the design properties themselves, to then identify how far these perceived and valued elements allow them to transfer the learning from the course themselves.

A qualitative approach was adopted for the study based on the use of content analysis [24], which involved drawing on various predetermined deductive categories from previous studies. The analysis procedure took a grounded theory model [25] as a starting point, considering the reality and experience of the subjects for a complete interpretation of the studied phenomenon. The techniques used to this end were documentary analysis (for course design and participants' reflections) and the semistructured interview (for trainees' perceptions).

The research subjects comprised ten of the participants on a virtual permanent digital skills training course for teachers, who were invited to participate and consciously and voluntarily agreed to do so.

The data sources used were the available documents from the course, an in-depth interview with the subjects to determine their perspectives and opinions regarding the course design, and the analysis of a training activity that the participants engaged in during the course. This latter element, referred to as Portfolio, explores and describes trainees' participation in the activities and subjective experience on the training course.

The training guidance documents analysed consisted of the following: the Course Guide, the Portfolio Preparation Guide, the plans and templates for evaluating the subjects, and the information offered on the course's Virtual Campus.

The transcribed interviews and the rest of the documents were analysed qualitatively using the NVivo program, allowing the data to be organized into previously established categories and the nature of the programme to be determined. Through coding, the categories were formed from theoretical concepts linked to the design of training aimed at learning transfer, thus grouping the data according to the thematic content analysis.

For data validation, the research is based on the principle of triangulation, which ensures the examined reality is reflected in information contributed by different sources [26]. The analysis of the course design could then be contrasted with the points of view of the users, thus obtaining more complete conclusions.

Below is the final codebook applied using the NVivo software, depicted in Figure 2.

3. Results

3.1. Analysis of the Course Design. The course analysis was carried out using the eleven categories defined previously in the theoretical review. It identified the objectives,

competences, and learning outcomes provided in the training guidance documents and in the proposed evaluation and practice.

Due to the length of the qualitative analysis conducted on the course design and space limitations here, we provide an overview of it in the figure below. The categories are presented as a summary of the documents in each category and the instructional elements that characterize them.

In Figure 3, we observe that evidence for practically all of the categories of analysis is found in the course guide, which consists of a document with guidance on the pedagogical approach and its general objectives. It also presents the skills and expected learning outcomes, as well as the structure and the formative process of the training course, in addition to the tools available on the virtual campus. Other relevant elements of transfer-oriented design are specified in other subjects or activities, such as the Starting Point or the Portfolio, among others.

Figure 4 presents a map to illustrate how the conditions for transfer are also specified in other elements of the course design, thus confirming that a large part comprises the learning outcomes—the competences or practice of learning—which are aimed at transfer.

3.2. Analysis of Trainees' Views on the Course Design.

Having verified that, in general terms, the design of the learning experience met the conditions that favour transfer, we will now present the subjects' views in this regard, supported by extracts from the portfolios and interviews that provide evidence of transfer or the intention to follow through with it, conferring validity on the categories employed and the ensuing results.

3.3. Student-Centred Approach. According to the portfolios, the student-centred pedagogical approach adopted on this Master's course enabled autonomous and continuous learning throughout the course, encouraging trainees to manage the changes they were undergoing as teachers and facilitating transfer:

"I can put everything I learned on the specialized Master's course into practice in an assertive way, which shows that I have achieved autonomous learning throughout this process. I must continue to demonstrate this as a teacher in the classroom when any challenge arises, using my knowledge to identify the most effective solution and implement it without any problems" (Portfolio, subject E).

Self-evaluating the training process itself to detect their interests and needs led trainees towards an improvement in their pedagogical practice:

"This subject has provided me with self-assessment tools that have allowed me to ascertain the amount of learning I have achieved on this specialized course, which will serve me well with my students in the future" (Portfolio, subject E).

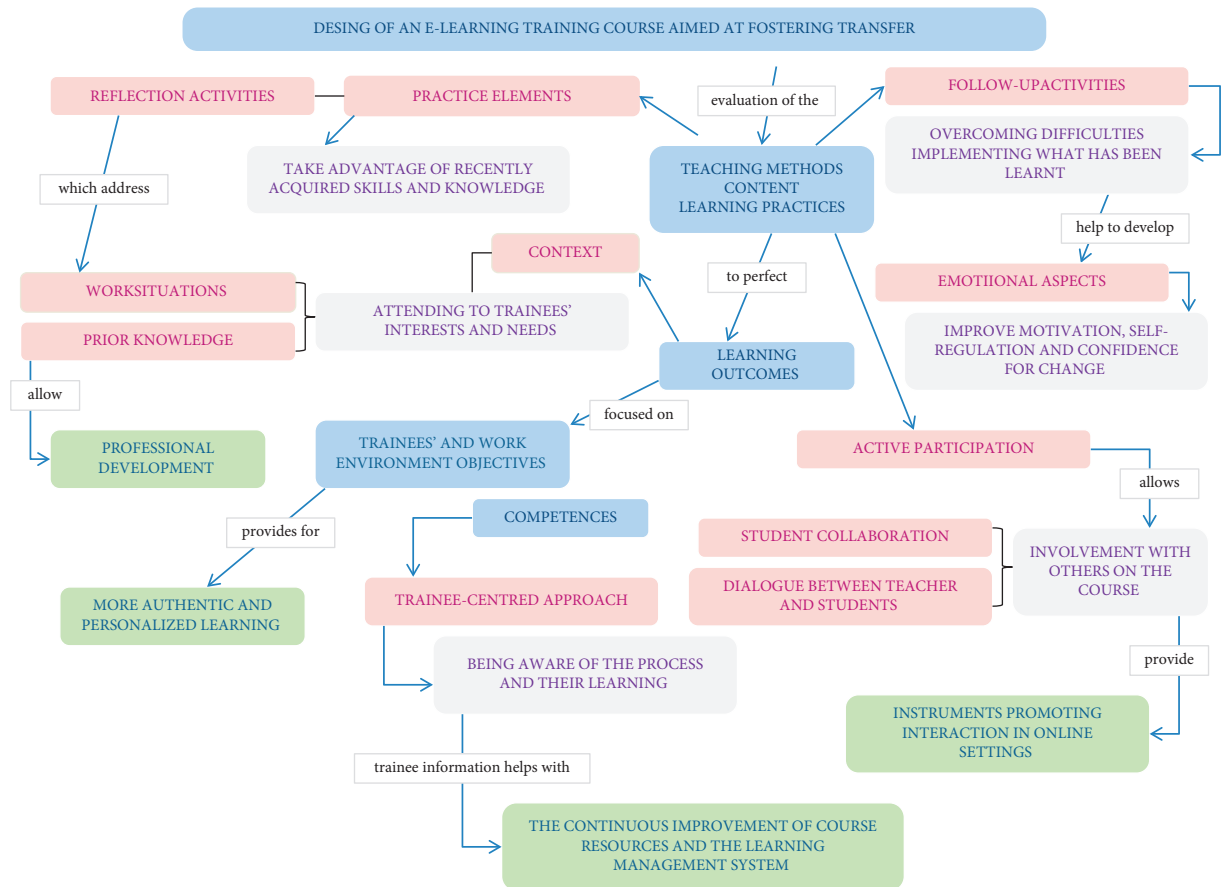


FIGURE 1: Concept map for the instructional design of an e-learning training course aimed at fostering transfer.

The changes and transformations that occur in subjects thanks to their participation on a training programme also characterize transfer:

When I reflect on the change that has occurred in me due to this new learning, I understand that I am in a phase of transformation as a human being and as a professional (Portfolio, subject C).

3.4. Active Participation. The portfolios reveal active participation on the part of the trainees who showed involvement with the acquired knowledge and were interested in applying it in their teaching practice:

“This postgraduate course, and specifically the specialization stage, has not only shown me other realities and opportunities to do my work, it has also stimulated my curiosity to know what else I can learn and do” (Portfolio, subject H).

The training activities also enabled a higher level of participation and autonomy in the learning process, essential for adapting the new skills to teaching practice:

“The way of teaching, the methodology and, in addition, the content used on the course have been aspects of great significance in my learning process, both for

understanding the topics and for autonomously constructing knowledge and appreciating the value of cooperative work. At the same time, all of this is connected to essential learning for teaching practice; it is a pedagogical reflection on the theory and the practice and the development of metacognitive competences” (Portfolio, subject D).

3.5. Reflection Activities. Many of the subjects provided evidence that the course is designed with activities that allow them to become involved in a process of critical reflection, for better application in a context other than that of learning:

“Since I started this Master’s degree, I have wondered how sure I can be about being able to apply the knowledge in my teaching work, that is, how I can guarantee improvements or modifications in what I do in the classroom according to the learning acquired on this Master’s degree. And I can only answer that question when I reflectively internalize the knowledge” (Portfolio, subject H).

The trainees provided evidence that the course promotes an enquiring and critical attitude, which in turn also results in a continuous and autonomous process of reflection throughout their professional life:

Categories	Codes
Student-centred approach	<ul style="list-style-type: none"> • Autonomous and continuous learning • Direction of their practice (protagonism) • Changes and transformations in the subject
Active participation	<ul style="list-style-type: none"> • Involved in ICT content • Participation and autonomy
Context	<ul style="list-style-type: none"> • Practices a dapted to their contexts • ICT application in a variety of contexts
Reflection activities	<ul style="list-style-type: none"> • Critical reflection in teaching practice • Continuous and autonomous process of reflection in professional life. • Reflective and critical stance on ICT
Activities with emotional aspects	<ul style="list-style-type: none"> • Motivation • Self-regulation • Confidence
Follow-up activities	<ul style="list-style-type: none"> • Mutual student support • More personal and in-depth feedback • More interactive assessment
Practical elements	<ul style="list-style-type: none"> • Linking theory and practice • Evaluation of real situations • Resolution of practical tasks
Previous knowledge	<ul style="list-style-type: none"> • Formalisation of prior knowledge • ICT knowledge foundation
Work situations	<ul style="list-style-type: none"> • Linking training with the reality of work • Application of knowledge in the work context
Collaboration between students	<ul style="list-style-type: none"> • Actions fostering collaboration • ICT skills and resources for collaboration • Peer assistance
Dialogue between teacher and students	<ul style="list-style-type: none"> • More personalised interaction • Understanding of time

FIGURE 2: Codebook produced using the Nvivo software.

“This self-evaluation, which investigates my own actions, constitutes a process of reconstruction of what was learned in action on the Master’s...” (Portfolio, subject I).

The following account of a critical and reflective stance towards the use of ICTs in their own teaching practice also represents transfer:

“After learning that we have to critically analyse the resources we use, it seems that I am already developing the habit of doing this automatically. [...]. In other words, I apply what I have learned on the Master’s on a daily basis” (Portfolio, subject C).

3.6. Follow-Up Activities. The discussion forums represented an enriching training practice due to the reciprocal support among the trainees in applying what they had learnt:

“For me it is important to improve my teaching techniques and learn from the experience of my trainers, but also from my course mates, to provide better tools for my students” (Portfolio, subject G).

However, it is also noticeable that the participants expected a closer follow-up by the tutors, with more personalized and in-depth feedback related to the effective

application of learning in a different scenario from the one in which it was acquired to help them overcome the difficulties of implementing what they had learnt:

“So I feel that the exams should be more, well, more focused on what is being learnt, more practical, that is, that the practice entails going with your students to apply the knowledge you learnt and recording yourself and sending the recording, so that they use it and give you feedback, because the feedback from the platform was very cold, you could only view the correct answers to the questions and I don’t know, it felt very robotic” (Interview, subject C).

3.7. Activities with Emotional Aspects. The motivation generated during the course was relevant for introducing changes and innovation in teaching practice:

“This process has led to my improvement as a teacher and significant learning, a teaching-learning process guided by trainers who successfully motivate me to build knowledge and reflective strategic thinking about my own practice” (Portfolio, subject D).

The self-regulation strategy, which is related to the ability to learn to manage limitations and fears during the learning process, characterizes a positive relationship with transference, as revealed here:

Categories	Course documents
Student-centred approach	o Course guide (p.2)
Active participation	o Course guide (p.1-2) o Subject Material FP111 -Analysis of Technological Resources and Design of Creative Activities (p.1)
Context	o Course guide (p.1-3) o Evaluation of subject FP110 -Teaching in virtual learning environments
Reflection activities	o Course guide (p.3) o Subject Material FP111 -Analysis of Technological Resources and Design of Creative Activities (p.2) o Portfolio development guide (p.4)
Activities with emotional aspects	o Course guide (p.2-6) o Portfolio development guide (p.5)
Follow-up activities	o Course guide (p.3-4) o Evaluation Document (p.2)
Practical elements	o Course guide (p.4) o Evaluation of subject FP076 –Virtual environments for collaborative work. o Evaluation of subject FP112 -Design and evaluation of training proposals based on ICTs
Previous knowledge	o Evaluation of subject FP111 -Analysis of Technological Resources and Design of Creative Activities o Template Activity Starting Point
Work situations	o Course guide (p. 2 y 3) o Subject material FP076 -Virtual environments for collaborative work o Portfolio development guide (p.1) o Evaluation of Subject FP111 -Analysis of Technological Resources and Design of Creative Activities
Collaboration between students	o Course guide (p.2 y 3) o Subject material FP076 -Virtual environments for collaborative work
Dialogue between teacher and students	o Course guide (p.5)

FIGURE 3: Documentary source for each of the categories.

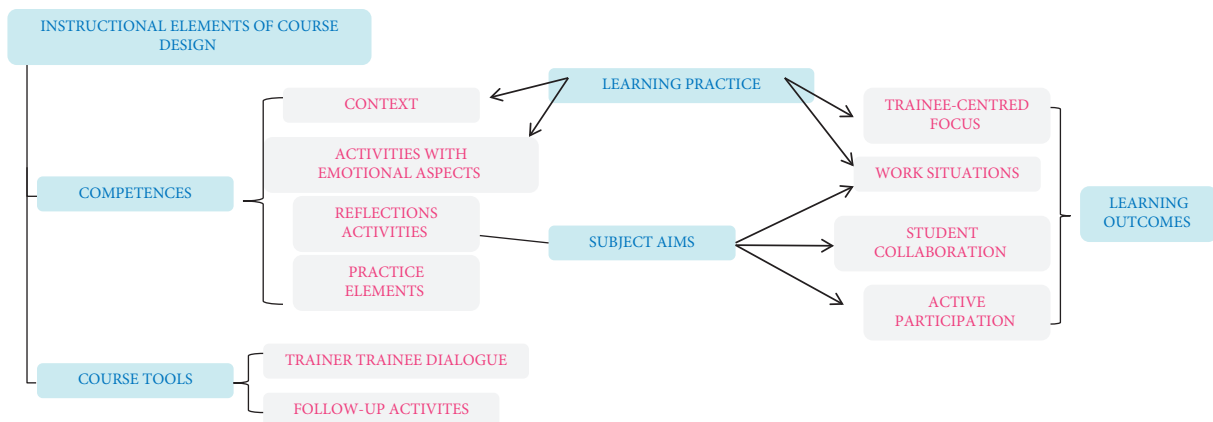


FIGURE 4: Specification of the design conditions and the instructional elements in the course design.

“When we started creating the website, I was scared because I had never had the opportunity to create one before. One of the most difficult parts was selecting the information and the structure according to the established objectives. When we had finished, I felt great satisfaction and desire to share the information and the site with my colleagues” (Portfolio, subject F).

The trainees acknowledged that the course stimulates and develops confidence for implementing changes in their practice, which increases the likelihood of transfer occurring:

“I definitely already feel more confident in knowing what I can use, what kind of tools I can start to include with a certain population, which ones they will need, let’s say. For example, that we work a lot with platforms, which ones. . . to search and analyse which are the easiest if they are well equipped at a pedagogical level, then that already makes me feel more confident in what I am doing” (Portfolio, subject J).

3.8. Context. The trainees were expecting training that was designed to meet their own teaching and learning contexts, with an adequate application of ICT tools in their work practice:

“The goals and objectives that I established for the different stages of the programme were to specialize in ICTs in education, improve my teaching practice and acquire skills that allow me to promote educational improvement in different areas and contexts” (Portfolio, subject E).

The learning experience reported by the same participant indicates the effective adaptation of skills developed in relation to ICTs in education in the context of their professional work:

“All of the subject content has been of great help because thanks to that I have come to fill certain gaps that I had professionally regarding ICTs as learning tools. I can state that my learning has been autonomous and at the same time very productive, since I have tried to put theory into practice in my workplace, giving myself the task of applying what I have learnt in class with my students” (Portfolio, subject E).

On the other hand, trainees also reported that the course enabled them to effectively apply learning in a different environment than the context where it had been acquired, which reflects transfer having taken place:

“Most of my classmates are from the area of education, they are teachers at primary, secondary or preparatory school, but I am from the area of health, and everything I learnt I can really apply. It’s not in a 100% educational environment, but rather a medical training environment, and the truth is that I was able to transfer what I’d learnt to my practice” (Interview, subject C).

3.9. Previous Knowledge. From the very beginning of the course, participants were already looking for the validation of their previous experiences and knowledge, linking this to academic support and professional development in their work environment:

“Although I have been working by trial and error for years, intuitively, I need a theoretical framework and academic support to check what I have been doing well or badly, what I should change or adapt, and thanks to this degree I can demonstrate to my current and/or potential employers that I am able to train future trainers” (Portfolio, subject A).

The same participant went on to indicate that her expectations in relation to the formalization of her previous knowledge had been fulfilled. However, she did not analyse the connection between this and the new knowledge in any depth and neither did she specify a possible application of what she had learnt:

“Especially in relation to the theoretical framework that I expected to find in this specialized training block, the contents of the subjects have helped me to formalize my previous knowledge and have precise ideas and projects for the inclusion of ICTs in my professional practice” (Portfolio, subject A).

Continuing in the same line, when asked if she felt qualified after the course, another participant basically reported the validation of her previous experiences and knowledge, without evidence of any new application:

“Yes, totally, because it gave me, let’s say, the theoretical support that I needed, because sometimes I did things and knew about the pedagogical side, but I did not really know or know specifically about the learning model in question mediated by ICTs. So that was the support that I can say today, well “Yes, it is based on an instructional model”, that is, different characteristics of online learning that I did not know how to justify before, I now know how to” (Interview, subject D).

3.10. Practical Elements. Generally speaking, the participants reported those training proposals that introduced some element of practice as being significant, showing evidence of the link between the knowledge acquired on the Master’s degree and the trainees’ teaching practice:

“With some of the films or videos they suggest, some tools are like, if we saw ourselves in a mirror and we began to see ourselves in practice, then relating the content of the teaching with the practice is inevitable, and so it’s about trying to do the best you can and change some of the incorrect things we’ve been doing” (Interview, subject F).

Offering training conditions similar to practice conditions, that is, reflecting on and addressing the possible challenges of new knowledge in practical situations, was also an element perceived as having potential for fostering transfer:

“We had to think of a pedagogical proposal that adjusted to our needs, problems or work interests” (Portfolio, subject E).

The precise resolution of practical tasks on the course was also described as appropriate in a learning process designed to foster transfer, due to the knowledge acquired within the training itself being applied to other subjects:

“I really liked the fact of using specific tools and trying to see how I was going to employ them, that was one of the things that was very clear to me, “design some pedagogical unit, something with the tools and things that we give you here, use your imagination and decide what you are going to do with it” (Interview, subject B).

3.11. Identifying Work Situations. The trainees’ reports indicated a link between the training and their work reality, an aspect that facilitates transfer:

“I feel that I have been provided with tools and web resources that are very useful to me in carrying out my daily work” (Portfolio, subject F).

In addition to taking the work context into account, the design and planning of a pedagogical proposal that was specifically oriented towards the needs of the job were reported as a significant experience:

“With this experience I was able to develop a b-learning training proposal that meets an educational need of our novice teachers who enter the education system, [...]. This information, together with the content of the subject, led me to devise a concrete training proposal that responds to a real need for training in our education system” (Portfolio, subject F).

And relevant transfer, which was made possible by adapting the training to the participants’ interests and work needs, was also noted on different occasions.

3.12. Collaboration between Trainees. Those pedagogical actions aimed at promoting collaborative learning facilitated the acquisition of new knowledge and exchange of experiences, which are significant for the training process; and they even allowed some trainees to identify obstacles to others’ learning and transfer:

“The work became tedious for him because of his reluctance to learn about new tools, [...] it did not allow the trainee to experiment, question and practice all the content that was being taught” (Portfolio, subject J).

Beyond this, the collaborative nature of the course resulted in the trainees taking responsibility for their learning and assisting their course mates until transfer was achieved:

“Connecting with a new course mate forced me to initiate a bond and express knowledge and difficulties in relation to the construction of work, the challenge of building with the other, at a distance, with differences in countries,

schedules and previous training [...] Sergio helped me, accompanied me, transmitted his experience to me [...] and I really felt that cooperative learning is enriching. We did a very interesting job, which required applying it in real life, involving my students, and I acquired the ability to include ICT resources in my subject curriculum” (Portfolio, subject I).

3.13. Dialogue between Trainer and Trainees. The participants’ accounts indicated their understanding of the time that the trainers made available for dialogue and their satisfaction with this. However, improvements were suggested regarding the implementation of new interaction strategies and forms of dialogue with trainers during the learning process, a fundamental aspect in fostering transfer:

“I think it could be improved, because especially with an online Master’s degree, in my personal experience, I think there should have been a little more interaction with the trainers, because although much of this is from my own research, I believe that we also needed to hear a little more about their experiences” (Interview, subject G).

3.14. Incidence of the Categories on Transfer. As we can see, the group of informants always positively valued all of the analysed categories, thus confirming their relevance to transfer. However, we can take this a little further and consider the differentiated immediate transfer of these subjects as an independent variable. All things being equal, this will allow us to assess which possible elements of the design might most influence transfer for one type of subject or another.

Using the Nvivo program, we were able to determine the incidence of each category for each subject and classify them into two groups, shown in Table 1, based on the evidence of the immediate realization of learning transfer presented here previously.

After identifying those subjects who immediately transferred learning and those who did not, we calculated the median for each group, which is recommended in studies with a small number of subjects [27]. Of the ten study subjects, only three did not demonstrate having transferred learning immediately. For a better visualization of the discrepancy between the two groups, we calculated the percentage discrimination between the categories for the two groups, represented in the graph in Figure 5.

The above graph shows that the positive categories, highlighted in green, represented a greater preponderance in the group with the largest number of subjects (who transferred learning), since those in red represent negative categories, which were predominant in the group with fewer subjects.

Of the eleven categories analysed, seven did not present a distinction between the two groups when the index being equal to or greater than 50% was considered to be a significant difference, and all were valued positively by the trainees, as evidenced previously.

TABLE 1: Incidence of the categories and absolute frequency in each group.

Categories/absolute frequency	Subjects without transfer	Subjects with transfer
Student-centred approach	11	29
Active participation	13	33
Reflection activities	13	50
Follow-up activities	6	23
Activities with emotional aspects	9	17
Context	19	40
Previous knowledge	10	11
Practical elements	13	44
Work situations	23	59
Collaboration between students	15	33
Dialogue between teacher and students	3	20

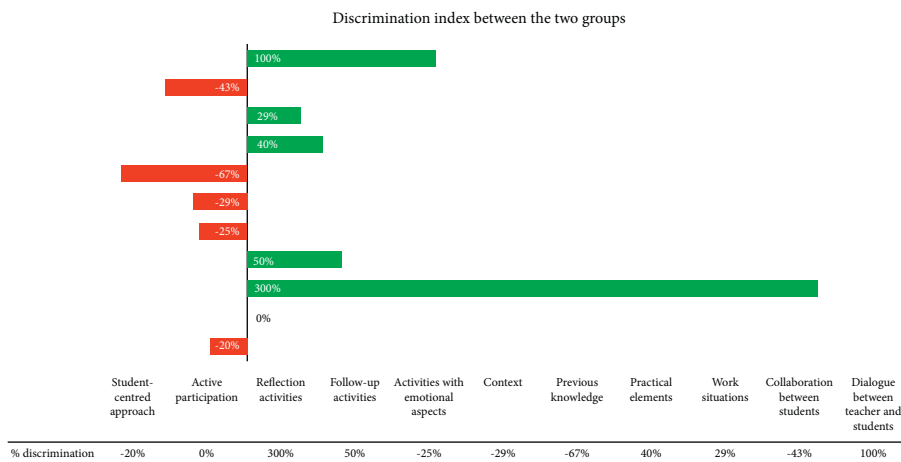


FIGURE 5: Graph of the percentage discrimination between categories for the two groups.

Regarding those categories that presented the greatest discrepancy, the reflection activity (300%) was the only one that can be confirmed to exert a high influence on transfer, since it was more recurrent among those trainees who transferred learning and was valued positively by users, as exemplified previously.

–On the other hand, the categories of follow-up activity (50%) and dialogue between teacher and students (100%), which both had a high percentage of incidence among those who transferred learning, were viewed negatively by trainees and possibly mentioned more due to the intention of the subjects to comment on how these could be better addressed in the course, as described in the previous section. As for the most discrepant category for the group that did not immediately transfer learning, this was found to be previous knowledge (67%). In relation to this point, the participants’ accounts indicated having expectations regarding the formalization and validation of previous knowledge and a clear intention to carry out transfer, but they did not specify any evidence of applying the new knowledge to their teaching practice.

Overall, no significant differences were observed between the two groups with regard to the categories, which suggests that the course design was oriented towards transfer, since most of the subjects effectively perceived these

elements as significant for transfer and reported it as such, and the small group that did not transfer learning may have been influenced by other external factors.

However, it is important to emphasize that the informants who began to transfer learning more quickly were the ones who gave the most weight to the reflection activities, meaning that this is one of the characteristics of course design most clearly related to effectively applying learning in professional practice.

4. Discussion

According to our analysis of the course design, it is possible to observe that most of the categories are supported by the learning outcomes and the competences planned for the course, which indicates that the course was previously designed in an appropriate way for the transfer process to take place [12]. In addition, most of the categories are based on learning practices, which makes it possible to put the knowledge acquired on the course into practice [14], with a training proposal oriented towards action and the improvement of teaching practice, which itself already points towards fostering transfer.

Another present and relevant aspect for transfer is needs analysis. This was identified in some categories [5] that take

into account both the participant and the context to which they belong, based on identifying work situations, resolving practical tasks, and the individual context of each subject [13].

It was also observed that the Portfolio instrument used to collect the data constitutes a didactic tool in itself. It supports a more conscious learning process among trainees, facilitates monitoring by trainers, and enables trainees' self-assessment of their training process and reflection on their teaching practice and professional development [18], thus also favouring the transfer process.

Given the presence of ICTs in almost half of the categories, these technologies were cited in relation to the instructional design of the course, with regard to either competences or learning outcomes or as part of the subject aims. However, this mention of ICTs does not only correspond to the technological and instrumental nature of the resources, since the trainees linked them to their active participation through the resolution of practical and collaborative activities based on a reflective and critical stance of their use, adapted to different contexts, including the subjects' work environment. We, therefore, conclude that the transfer of digital skills was also planned in the initial development of the course.

Beyond that mentioned above, however, our research has also led us to analyse the subjects' views on these categories of transfer-oriented design in a context of continuous online training (which therefore differs from the contexts in which transfer is usually analysed). In our case, it is especially relevant to have found that, aside from a generally positive assessment, as we have seen, the trainees also perceived a direct relationship between these characteristics and application of the acquired learning to their professional teaching practice. For this reason, we have confirmation not only of a transfer-oriented design but also of the trainees' belief that these a priori characteristics, put into practice, allow them to transfer learning to their work as teachers.

In relation to participants' perceptions of transfer gleaned from their portfolios and interviews, in the student-centred approach category, according to the portfolios, students considered that the teaching methods employed enable autonomous and continuous learning, which shows that they are aware of their own learning process [15]. In addition, the self-evaluation activities allowed for their interests, needs, and difficulties to be identified and attended to, meaning that the course activities transformed their practices into transferrable learning.

In the category of active participation, it is also possible to identify that the subjects were actively involved in the course content and with their course mates and that they valued acquiring knowledge in a participatory and autonomous way [14] for its application in their practice as a teacher.

Regarding the reflection activities, the trainees confirmed that they made it possible to become involved in a process of critical reflection on their teaching practice [2, 7, 16], including in relation to the use of ICTs, continuously and autonomously, throughout their professional

life. And, in the case of the present study, this was especially positive for those who had already immediately transferred learning as opposed to those who had not started to transfer it, which is a finding of particular relevance.

As for the follow-up activities, the aim of transfer is evidenced when the subjects pointed out the need to obtain more personal and in-depth feedback, with follow-up more related to practice, in order to overcome the difficulties of implementing what they had learnt [7, 16].

Regarding context, the participants' accounts confirmed that the course design met the needs of the trainees' own contexts [13], as well as showing them how to adapt the use of ICTs to different teaching and learning contexts, with clear examples of transfer.

As far as practical elements are concerned, the possibility of addressing potential challenges and linking the content through the concrete resolution of practical tasks [2, 17] were considered important by trainees who included these in their portfolios as significant experiences, stating that they increased the probability of transfer occurring.

The same can be said of identifying work situations. According to the trainees, the course made it possible to link the content with their work reality and identify needs in this context [3, 22, 23] and then adapt and transform their teaching practice in specific ways.

Another relevant observation is the trainees' negative assessment of the follow-up activities on the course. The participants valued the discussion forums positively, due to the exchange these fostered with their classmates; however, they called for more personalized feedback in the evaluations, which would allow them to overcome the difficulties of implementing what they have learnt [7, 16, 18]. In this case, the messaging tools offered by the course do not constitute technologies that would facilitate this process, and trainees suggested the need for a more personalized resource.

Equally, collaboration between trainees and dialogue with trainers were present in the design in the form of campus tools as instruments to promote collaboration in online environments [14, 21]. However, the participants' accounts emphasized that these should be more interactive and that some participants had difficulties using the technological tools, making the collaborative learning process more complex.

The categories of emotional aspects and previous knowledge did not display any concrete relationship with transfer, only the intention to transform teaching practice in relation to these factors. However, we did note how subjects had increased confidence with regard to transfer, as well as motivation and self-regulation [19, 20], in part through the validation and formalization of their previous knowledge.

5. Conclusions

By way of conclusion, we can state that the course analysed here is designed to foster the transfer of learning according to the categories taken from the theoretical review conducted previously and that the trainees also positively valued these design elements observed on the course. Evidence of this is found in the portfolios for most of the

categories, where the course design was specifically mentioned in learning situations with some evidence of transfer or the intention to carry it out. It is also worth highlighting the importance of providing reflection activities, mainly in this specific context of continuous and online training, since this helps trainees face the challenges in practice and provides them with an understanding of how learning can be applied to and will be useful for their professional development.

In this study, we have adopted the theory of learning transfer in a more general learning context to analyse course design categories in a virtual learning setting, and we can state that when the course is designed to foster transfer, the trainees' assessment and the incidence of course design elements are the same, regardless of whether learning has been transferred or not. This confirms the theory that when the course is well geared towards transfer, the process can be facilitated, even if this can also be influenced by elements external to the course. We can therefore conclude, firstly, that context and mode of training are not relevant, since the design of the course in our specific context—that of continuous online teacher training in ICTs—was valued positively by users in terms of learning based on the categories indicated by the general theory and, secondly, that in this case the design of the course favours the immediate transfer of learning.

Finally, it should be noted that this article only presents results pertaining to the categories associated with the design of training for the transfer of learning; that is, it only contains part of the findings from a larger study on learning transfer in the context of continuous and online training. Therefore, in light of the results shown here, an in-depth analysis of the potentially more relevant categories for the transfer process will be carried out in future stages of the study, also considering aspects related to personal characteristics and the subjects' work environment, which is equally decisive in the process.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Consent

Informed consent was obtained from all individual participants included in the study.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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