USE OF TELEMATIC TOOLS AS A SUPPORT FOR TEACHERS' TRAINING

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Abstract: The use of telematic tools by online learning communities, through the true involvement of all the participants, allows strengthening of net learning models. These models, if adequately designed, may stimulate the development of competencies in teachers' training. Technological evolution has made the use of telematic tools more and more of an option in distance learning; these tools have become an indispensable support for achievement of educational aims in learning institutions, namely through the provision of means for the interaction between participants. This work now aims at describing some of the results obtained from a study involving telematic tools in a model of online teachers' training. In particular, we will describe the benefits and difficulties that were found and we add   some reflections on solutions for the improvement of this model.

1 INTRODUCTION

Distance learning models that use ICT, namely telematic tools, may help building up heterogeneous learning environments that stimulate learning and the evaluation of knowledge acquisition, and, at the same time, ease permanent access to a kind of learning that adjusts itself to the individual, group or community needs. This way several barriers usually associated with distance learning models, such as social isolation of the student, limited resources and materials, or the loose relationship between teacher and student, are overpassed (Gomes & Caldeira, 2003; Morueta, 2002). Additionally, the use of telematic tools allows for the flexibility of training models, as it diversifies the ways by which participants communicate and interact, this way meeting each and everyone needs, not only in terms of material resources, but also with regards to the requirements of individual or group learning; it thus contributes to the reinforcement of metacognitive learning strategies. The pedagogical process achieves a new dimension, as the use of telematic tools contributes to the involvement of all

participants in the generation and dissemination of knowledge.

The possibility of choosing the more adequate technological resource among all available allows for the diversification of the methodologies used and of the several didactical support material. It also contributes for the generation of online learning communities involving participants from different geographical regions and based on real time interaction (Morueta, 2002). Additionally, teachers are able to help students in real time and, depending on the circumstances and objectives, to individually supervise students. Indeed, as Gray, Ryan and Coulon (2004) have stated, distance learning is not merely another means for the transmission of knowledge; it is a true way of changing the relationship between teachers and students and one that requires new skills and competencies. Morueta (2002) points out that one of the advantages of the usage of telematic tools is its ability to help teachers to focus teaching on the student. As such, in the context of teachers' training, whose final aim is doting teachers for their future practice, it endows students interactive and socializing abilities, this way enabling them for the development of their own

responsibility, which permits that students may manage their own learning process. Thus, a balance should be sought between individual and shared responsibilities in collaborative work. Sorensen (2003) has suggested that cooperative work allows participants to acquire introspection and to develop meta-reflective abilities, which contribute to work of a higher quality. It also leads to development of an argumentative speech that contributes to the development of knowledge (Weinberger & Fischer, 2006).

The use of telematic tools may stimulate the generation of cooperative procedures as it emphasizes interactions in which participants actively cooperate in the learning process, namely through group discussion of questions and solving of problems. This leads to the attainment not only of specific objectives of the learning process, but also of social and cognitive aims.

On the other hand, one of the main concerns of internet training models regards the credibility of all learning process, as it takes place online. This matter has been dealt with by several authors. For instance, Osuna and Almenara (2002) suggest that the main limitation of online training is related to the evaluation process and to virtual accreditation.

In spite of the relation between evaluation and accreditation, evaluation should be continuous; being an activity that involves procedures, it is not exclusively a technical action, as it is a human action that involves several ethical and moral values. Accreditation always refers to the final product and may be achieved through assurance of face-to-face interactions.

Insecurity regarding the evaluation of online teaching is related to the novelty of this kind of training and to the constant evolution of technology. Even though some of the strategies of evaluation used in face-to-face and distance learning are similar, it has to be taken into account that new technologies (internet and multimedia) always impose new ways of understanding the process of teaching and learning and, consequently, new means of evaluation that are based both in synchronous and asynchronous communication resources (Cabero & Gisbert, 2002; Osuna & Almenara, 2002). It was also suggested (Cabero & Gisbert, 2002; Osuna & Almenara, 2002) that online evaluation should generate multiple opportunities so that a constant feedback exists with regards to the work developed by the student, and that it should always involve evaluation planning, taking into account several features, such as various means of coherent evaluation, and taking advantage of multimedia educational material; it should also promote bidirectional communication between teacher and student and immediate feedback; define types,

strategies and objectives of the evaluation (summative, formative, auto and hetero-evaluation, time of evaluation) and use several strategies and methods in an articulate way.

It is thus important to understand, in our context of training, how telematic tools help in judging the quality of a performed task, so that decisions may be taken, and how these tools contribute to the certification process. It is also relevant to assess the benefits to the training process brought about by their use. As the communicative interaction between participants is important for the real consolidation of learning, it is of interest to understand how the use of telematic teaching strategies may contribute to a supported learning. It is also relevant to understand how to give credibility to online training models and which would be the most adequate means of evaluation to use. As such, it is very important to study models of training of teachers that present these features, even more as our society is increasingly a technological one, and as the social interaction between participants is essential for the development of a true sense of learning community among users.

The main aim of this work is to assess the major difficulties and advantages of the usage of telematic tools in the context of the initial training of teachers, and to identify the main issues to be taken into account regarding their use in our model of online training.

We will try to elucidate several questions: how does the use of telematic tools contribute to the online training process? How does its use contribute to a more responsible and conscious evaluation of the training process? What could be its role in the establishment of social relationships? What benefits would it add to in class training?

2 THE STUDY

The herein presented work is part of a vaster research project on an online teachers' training model, which involved the creation of an online community and the participation of teachers in train from the Physics and Chemistry Teaching Course of the University of Azores as well as their supervisors. The participants were being trained in schools from different islands of Azores Archipelago. The study also included a general supervisor from the University of Azores. The use of internet allowed the discussion of several matters of interest for the training of the teachers to be, not only among them, but also with the school and the University supervisors.

It is in this context of training that the use of telematic tools is introduced as a complement to internet. The use of these tools shortens distances between participants through the several communication channels available and to which each of the participants has access, allows for a greater socialization between participants, and permits the diversification of learning strategies and methodologies, this way contributing to the alteration of the evaluation performed.

The interactions established through the net are somewhat impersonal; this feature and the delay associated with information exchange reinforce the necessity of the creation of synchronous moments, such as the chat room and videoconferencing. Besides improving real time interaction between participants (Gomes and Caldeira,2004), these tools assure the development of other important skills for initial training of teachers, as every member of the community has the opportunity to organize and prepare individual or group activities, to present their work, to clarify doubtful matters, to get answers, and to provide immediate feedback; telematic tools provide a more direct interaction between all community members.

In order to enrich interactions between participants, training of teachers was supported by a diversity of methodologies and strategies, such as the creation of a Yahoo group that has used the e-mail as the main communication resource, the elaboration of a webfolio, face-to-face seminars, and chats and videoconferencing to generate moments of synchronous interaction, among others. This way, enriching interactions were provided still taking into account each and everyone availability and the geographical distance between community members. Teachers in train were able to interact with each other at any time in any place, contributing to and cooperating for their own formation. The server used in this net community allowed participants to exchange e-mail and to archive documents. It also included a diary for the management of activities, and a list of all messages sent, among other features.

For the formation model to improve significant learning with cognitive and metacognitive processes, it is essential a good, previous planning of the activities to be developed online. Activities should be planed so that their execution should benefit all participants and meet the objectives of the formation. Planning should follow certain rules and include objectives, questions that may be debated, supporting references and the definition of the evaluation. Planning of activities in this model of online training using telematic tools proceeded through several stages. Among them, one may point out the work's plan, which involved collection of suggestions and their online discussion,

development of the activity, discussion and the respective evaluation. Teachers in train discussed their plans with the University supervisor using e-mail or other resources. Plans were then shared through the net and the participants exchanged ideas and clarified doubts. The task was then performed and the planned questions debated. Afterwards, the participants evaluated the activity.

During online training and after the use of telematic tools, enquiries were done; these consisted of questionnaires presented to the participants, and also interviews, regarding the main advantages and limitations of these tools in training. One of the questions referred to the participants' opinion on the contribution of the reflection model used online to the reflective development. A videoconference was audio recorded and its content was transcribed. Several chat sessions were also documented; these included not only interactions among teachers in train, but also between teachers in train and the university supervisor. Finally, all documents and opinions were discussed and analysed.

3 RESULTS

In the analysis of the data we firstly describe the opinion of the participants about the main difficulties and advantages of the use of telematic tools as an aid to their training. We then analyse those that seem to be the main features of our context of training network. We have evaluate several features, but we have focused our attention only on those there were pointed out more often. Initially, data were treated in a description way; we have only quantified the frequency and relative frequency, as these could help us to interpret our results. In table 1, we present the main difficulties found. We observe that a significant number of opinions regard the lack of technological means in schools, as well as lack of formation in ICT. It was also curious to note that some net members experienced difficulties on choosing which communication means to use.

Table 1: Main difficulties.

Answer	F	%
Management of some tasks	22	11,8
Lack of decision ability regarding the best communication resource to be used	18	9,7
Different participation rhythms of the participants	19	10,2
Lack of formation of some community members with regards to ICT	38	25,8
Lack of information of some members on the procedures of the use of telematic tools	23	12,4
Lack of resources in the schools to where teachers in train were assigned	45	30,1

In table 2 we present the main advantages that were pointed out.

Table 2: Main advantages.

Answer	F	%
Development of collaborative work	45	12,4
Constitute a complement to face-to-face classes	34	9,3
Shortening of geographical distances	58	15,9
Enabling of a closer contact between community members	33	9,1
Allow for a quicker answer to certain situations and doubts	35	9,6
Development of skills on ICT	25	6,9
Development of fundamental competencies such as synthetic ability, writing, speech, etc.	23	6,3
Allow the accompaniment of the colleagues work	52	14,3
Allow for individual supervising	59	16,2

We have found that these training strategies permit that all participants may share management and coordination tasks in a more prominent way that in face-to-face classes. In classroom teaching, teachers tend to manage time and resources in his/her own way. In the herein described online system, everybody may participate in management of learning and teaching processes. In this way, this kind of interaction provides individual and group participation one that are more adequate to everyone's needs. However, management and coordination are fundamental for the development of the training process. One of the ways to overpass the managing problem is to involve all group members in this process.

We have also observed that the use of telematic tools facilitates interactions and the cooperation between participants, this way complementing face-to-face teaching. In this context, we believe that telematic tools may be used to consolidate online training models. Assuring some features that may improve communicative online interaction, which will allow for a significant learning environment, we achieve true cooperation and interaction between all group members. Thus, interaction catalyses building of knowledge, values dialogue, negotiation, collaboration and teaching and learning processes.

As for the social interaction, group members share activities and present a shared life. Being a basic social process, social interaction takes place at the sensorial level, since chat and e-mail enable interchange of emotions, friendship, sympathy; it is also expressed through symbols in written language.

In videoconferencing, oral and gesture languages are privileged. As such, one may state that the use of these telematic tools permits that social interaction is characterized by the development of social relationships between participants. This kind of interaction provides a friendly mood among participants and strengthens the relationships established, and may occur at any moment as it would in face-to-face classes, even when participants are debating some formal content.

It was a common opinion among the participants of this study that this type of training model eases enrichment of interactions and increases knowledge acquisition by group members and potentates group reflection. One of the features of this model is to permit sharing of experiences and opinions that are based in the pedagogical experience of each and everyone. This kind of interaction mirrors life experiences of all group members with relation to any subject or theme. This way, it allows development of special skills that are essential for an effective citizenship, as participants question themselves about all that is said and all they stand for, generating high quality and highly dynamic interactions in which knowledge is built based on a socialization process in agreement with the funded positions of the participants. This interaction allows participants to evaluate not only their own opinions, but also their positions with regards to the other members of the group, as, after interaction, everyone's position is questioned, this leading to high standard results.

We may thus conclude that both face-to-face and distance learning involve development of social

interactions and that these interactions are similar. The main differences, which value the use of telematic tools, are development of written language in chat sessions and e-mail, and of gesture and oral languages in videoconferencing and face-to-face classes.

We have also found that through the use of telematic tools skills that are not usually used in face-to-face classes develop; this is the case of synthesis and sharing abilities and responsibility for the training.

Although, in general, participants agree that face-to-face classes may be substituted by chat or videoconferencing on the majority of times, they believe that it is important to include some face-to-face moments. This suggestion is acceptable, as this was the first time participants experienced online training. They were all used to traditional teaching, in which knowledge transmission proceeds from teacher to student and in which the effort to learn is essentially dependent on the individual, turning it into an isolated act.

As for evaluation, we have observed that the consciousness of participants of its importance, namely in the final training year, has contributed to planning of all the activities that took place online, taking into account all the objectives and the respective evaluation. Those instruments were proposed by the person responsible for planning or by the one that suggested the theme or subject to be debated online. This evaluation was mainly formative, presenting a character of continuity and was chosen based on the objectives that should be attained. In this context, and being shared online, it gains a new dimension, as it is of everyone's responsibility. Furthermore, it becomes more varied as several training environments are generated that facilitate learning and knowledge evaluation. It is important to point out that it is essential for feedback to be immediate in order to be efficient.

We have found that the use of telematic tools at the educational level allows for the interaction between participants, who are able to share experiences, discuss ideas and question one another, this way contributing to the general acquisition of knowledge. The fact that cultural and information diversity – skills – is discussed among participants is essential for the learning process. Debating and sharing has contributed to reflective development and to a greater consciousness of all work that was accomplished by the community.

We have also observed that it is important to create rules, to delegate responsibilities and to participate through the use of telematic tools. Efficient management of the group is essential for this kind of online training.

One of the main concerns that were highlighted by students regarded lack of training in ICT during their degree. They also pointed out the difficulty of access to internet and the lack of material resources they have found in several of the schools involved in this work. The majority of the schools had not the necessary resources available. As such, some of the features that should be taken into account when implementing telematic tools in this kind of training system are:

- provide formation on ICT to the participants;
- assure that everyone has access to information on how to use these tools;
- guaranty good management of resources;
- plan the activities in advance clearly stating the objectives and the adequate evaluation methodology.

One should be aware not to generate inequalities between participants. Lack of resources and of adequate training for online work, as well as the access to all tools and evaluation criteria, must be a requirement for good functioning of the training model. From the ethical perspective, these items should be valued, as, if these situations are prevented, some of the prejudices about the use of ICT in training contexts will be abolished.

4 CONCLUDING REMARKS

We propose the use of telematic models of training as a means to diversify training and make it more flexible. Flexible training is a resource for permanent learning. This way, schools will be answering a challenge posed by contemporary societies, which are becoming increasingly technological. Schools will be surely additionally contributing to the development of skills that will enable individuals to deal with internet resources in a secure and discerning way.

One of the objectives of this training model should regard the education of the individual so that he/she will become an active member of a democratic society. For that, participants should get used to work together for a common aim, as this way they will acknowledge that a democratic society will only survive if social orientation prevails.

Generation and maintenance of a learning community through the use of synchronous and asynchronous communication tools demands establishment of rules that facilitate interchange.

We have found that blended learning strategies, namely the use of telematic communication tools, in teaching-learning processes are useful for the consolidation of online training models.

A good educational strategy using adequate telematic tools is essential for quality training.

The use of ICT generates a new training paradigm. However, in the future, it will be important to keep on elucidating the main characteristics of online training didactical models that use tele-teaching.

Finally, it is important to note the emerging necessity for the redesign of teaching models due to the perspective of the development of new auxiliary methodologies for academic training. These have been suggested by authors that support a greater technological interactivity at the University level.

In order for students to be prepared for their professional life, it is important for them to experience group working based on telematic cooperation.

To conclude, a good integration of net participants, along with well established objectives and a well architected training model is necessary for the development of a good educational strategy, and are essential ingredients for successful courses that use telematic tools.

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