GUIDANCE AND MONITORING OF LEARNING VIA INTERNET
Analysis of a Practical Experiment

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Abstract: During the 2005/6 academic year, we experimented with adapting the subject of *Psychology of Instruction* in the undergraduate Psychopædagogy degree course to the European Higher Education Area (EHEA). This involved transforming presencial tutorials into virtual tutorials. We here describe our experience and analyze the strengths and weaknesses that we encountered in using different tools of synchronous and asynchronous virtual communication to monitor the students' learning. The results showed a greater willingness of the students to become involved in the study of the material, a significant increase in their grades and in particular in the number of passing grades, and a change of attitude from one of total passivity to an optimal degree of activity, responsibility, and commitment.

1 INTRODUCTION

The adaptation to the European Higher Education Area (EHEA) of the subjects taught in Spain's degree courses entails major structural and methodological changes that are determinants in the teaching and learning process. The transformation to a model of teacher education centred on the development of skills that will allow the prospective teacher to adapt to the new situations and demands of a constantly changing society means that the university will have to renounce, at least in part, the excessive specialization that has been the case until now. In the process of European Convergence in Higher Education, it is of prime importance that prospective teachers finish their studies not only with the knowledge needed to master a certain area, but also with the skills required to apply that knowledge in practice, to resolve the problems that they will face, to manage information, work in groups, analyze, synthesize, organize, plan, etc. (Reichert and Tauch, 2003).

To put these changes into effect, Spain's universities must undergo a process of transformation which will require both the acceptance of a new structure (undergraduate–graduate) and a modification of the roles of the faculty and the students. Nevertheless, these new roles are really no more than a reflection of a long suppressed demand that has on many occasions not been allowed to come to the surface because it would have meant a break with the monotony and commodity that had been forged over years, because of a lack of time, because of the constraints imposed by the system itself, because of the lack of commitment of some of the stakeholders (faculty or students), etc.

If we were to ask students what they expect from a teacher, or what they would wish their teachers to be like, we would almost certainly get answers such as that she (or he) should be a pleasant person who makes her classes participative and attractive, who explains things comprehensibly, who is easy to make contact with to resolve points of doubt or to ask questions, who allows the student a certain margin of autonomy and initiative, who makes her material appear interesting and useful, etc. Likewise, if we were to ask teachers what type of students they would like to have in class, it is not hard to imagine what some of the answers would be: active people with initiative, responsible in their dedication to study, participative, showing a certain degree of uncertainty and curiosity that leads them to go deeper into the content that they have been presented with, etc.

In these foreseeable answers, one discerns already the 'new' roles that faculty and students are expected to play. The students are asked to be more

active in their own teacher education, with a greater capacity for autonomy, responsibility, decision making, and dedication to study. The teacher is asked to act as a manager of learning, i.e., to perform the functions of programming and coordinating the teaching and learning process, giving priority to the development of skills for the acquisition and reproduction of academic knowledge (Lugo, 2003).

In this sense, the adaptation of Spanish credits to the European Credit Transfer System (ECTS) promotes and facilitates this reorganization of the roles of teacher and student, as well as encourages the use of new formulas for communication and monitoring that allow the participants not all to be physically present. In particular, we refer to virtual tutorials carried out either synchronously or asynchronously. Indeed, the tutorial function can be said to be one of the pillars consolidating on-line education (Padula, 2002).

In the University of Extremadura, as in many other Spanish universities, this process of adaptation to the EHEA has been initiated by putting into practice pilot projects focused on specific subjects or entire courses. The present work deals in particular with the material of the *Psychology of Instruction* course taught in the Psychopædagogy undergraduate degree syllabus, and presents an analysis of the measures adopted and the results.

2 THE VIRTUAL PSYCHOLOGY OF INSTRUCTION TUTORIAL

On-line tutorials may be conducted using a variety of communication tools. These may be synchronous (IRC, videoconferencing, digital blackboard) or asynchronous (e-mail, discussion fora, FAQs).

An *IRC (Internet Relay Chat)* allows the real-time exchange of messages in order to resolve doubts, share opinions, reflections, etc. The tutor and the students agree on a timetable for entrance to a virtual 'chat room' in which these exchanges of communication will take place. One of the advantages of this tool is its immediacy and simultaneity. Nevertheless, it does not allow for the concept of flexibility that is the backbone of virtual on-line education and in particular of virtual tutorials. The fact of setting a timetable can make it difficult for some people to access and use this means of tutoring. It may require major changes to the management of their study time which they do not always willingly accept. Also, an IRC channel involving an extensive group of students such as an entire undergraduate class can generate a situation of chaos that makes it necessary to consider a more restricted use of this medium for very specific situations and with smaller groups. If all the students participate, the tutor can not attend to them all at the same time, and the delay can become interminable and boring, as well as the session extending for long hours that the students could instead be devoting to studying and planning the material. In our case, the large number of students enrolled in the course (more than one hundred and forty) made it unfeasible to activate a single virtual chat room. But using different IRC channels, and dividing the students into groups, would have required devoting an entire working day to the task, when there are other tools available that facilitate these exchanges and provide better results with less investment of time.

Videoconferencing still has to overcome various technical drawbacks (speed, precision, cost), and it requires some innovations at the software level to be optimally acceptable as a tool of virtual tutoring. When videoconferencing is as simple as making a phone call, it will represent a major advance in on-line education. Our students lack the necessary means and resources (both material and in terms of know-how) for videoconferencing to be established as a way to conduct tutorials. In sum, this system was inviable in our case.

Within the group of asynchronous communication tools, we would highlight the use of *e-mail*. This medium allow each student to set out his or her doubts and questions without the limitations of time and space represented by the dynamics of an IRC channel, and allows the response to be individualized and thorough. The effectiveness and utility of this tutoring system are greater the more promptly the response is given to the e-mails received. It is at least recommendable not to exceed twenty-four hours. Again, the large number of students enrolled in the course appeared as one of the main problems in virtual tutorials of this type. This unsurprisingly was especially notable on the days or weeks prior to the deadline for handing in a work or to an examination. On those occasions, we received an average of 80 e-mails daily, which made it practically impossible to respond to all of them in a reasonable time. Also, this task required the teacher to work exclusively on answering e-mails, an aspect which is really not permissible. In those cases when the questions referred to points corresponding to some practical work on the material that counted towards the final

grade, the students were asked to use group e-mails through a mailing-list type address that all the members could consult. This measure led to a reduction in the number of e-mails received, and helped streamline the responses.

Nonetheless, we think that many of these e-mails become unnecessary if one makes the appropriate use of *discussion fora* and *FAQs (Frequently Asked Questions)*. These tools allow one to make public both the questions that the students raise and the teacher's answers. The advantage of this system is that the teacher's explanations can resolve the doubts of many students without each of them having to be answered personally. We encountered two basic problems using these means for tutoring. First, the students often made inappropriate use of the discussion fora. They used the system to comment on situations or questions that were unrelated to the material or the topics under discussion. This converted the fora into bulletin boards and meeting places for extra-academic subjects. And second, the distrust and insecurity of many students led them to use e-mail as the main means of communicating with the teacher. One of the reasons was their preference for a personal response (e-mail) over a group response (discussion forum).

3 ADVANTAGES AND DISADVANTAGES OF THE VIRTUAL MONITORING OF LEARNING

From the experience of adapting the *Psychology of Instruction* content to the EHEA and adopting the ECTS tutorials as the means for guidance and monitoring of the students' learning, we were able to extract a series of apparent strengths and weaknesses of the process.

3.1 Strengths

A first advantage of the ECTS tutorials arises from the use of e-mail. This time-delayed means of communication adapts itself to all the students' timetables, since they use it when needed or when convenient. In this sense, ECTS tutorials satisfy the criteria of flexibility that are indispensable in virtual education. For instance, it facilitates independent management of study time according to each student's possibilities and needs.

The second advantage is the potential of this instrument for thorough in-depth monitoring of the

student's learning. The questions that a student puts to us in e-mails allow us to observe the degree of understanding of the material that he or she has reached, the learning strategies used, the level of reasoning and expression, etc. With this information available, guidance will not only be directed to resolving conceptual content, but also to fostering reflection and the acquisition of metacognitive strategies that will allow the student to adopt a more effective strategic form of behaviour. This information also allows a re-orientation of the instructor's teaching. When the teacher detects difficulties that the students show in carrying out some task, he or she can propose new activities, follow other procedures, complete part of the syllabus, check that the methodological strategies match the students' needs and demands, etc. In this sense, the virtual ECTS tutorials constitute an exceptional evaluation tool in the sense of being an instrument of improvement as well as of monitoring. Also, the information contained in the e-mails makes it possible to evaluate the effort that the student has made, how he or she has managed study time, organization, planning, etc.

A third advantage lies in the possibility of using new formulas for teacher-student interaction. Sometimes, fear of ridicule or of making their lack of knowledge public leads some students to be reticent to participate in class, to ask questions, to contribute observations, etc. In these cases, the anxiety, tension, or stress generated by a public face-to-face intervention with the teacher or with their classmates disappears, or is at least softened, as the contact is not direct but deferred. In this way, the students can present their doubts and the teacher can access their prior knowledge and conceptual relationships with respect to the content dealt with in class. This all allows the teacher to more easily guide the learning process.

And a fourth advantage is the students' enhanced involvement in and positive predisposition towards their own learning. This was reflected in the present experiment in an increase in the number of passing grades in *Psychology of Instruction* relative to the results in previous years in which the tutorials were exclusively presencial and at set hours. The students observed that the almost immediate resolution of their doubts and the contribution of complementary material avoided interruptions in their study time and learning process. Some of them too indicated that the teacher's monitoring of their e-mails demonstrated interest and concern for their learning, and led them to accept greater levels of commitment to study and carrying out course work. For other

students, being able to get a personalized answer from the teacher gave them a greater sense of security and confidence because they no longer had to guess what the teacher was going to consider as valid or incorrect, but now had this information directly and immediately. This sense of security encouraged them to continue advancing in their learning, to look for new information, to explore other forms of resolution, etc.

3.2 Weaknesses

The weaknesses that we detected were of two types: those that directly affected the figure and functions of the teacher, and those that were more related to the activity of the students.

With respect to the teacher, the large number of students enrolled meant the reception of an enormous amount of e-mail, especially at certain times of the course. If to this one adds the promptness with which the teacher must reply for the answer to provide the student with the help expected, the result was an excess of work load that, together with the preparation and teaching of the classes themselves, meant that all of the teacher's working hours and a large part of personal time as well had daily to be devoted to monitoring and instruction.

The new educational approach accompanying adaptation to the EHEA – learning general content, with the focus on the acquisition of skills, as opposed to learning excessively specific content – implies breaking with an individualistic culture and encouraging coordination between teachers by providing and constructing new routes of communication and cooperation.

Finally, the need arises for greater support and endowment of teacher education centres and departments to enable content to be adapted to the EHEA and to put ECTS tutorials into practice. In particular, the need is for more personal resources and technological infrastructure, and greater organizational flexibility such as in class timetables.

With respect to the students, we perceived an apathy or resistance on the part of some concerning the change from presencial to virtual tutorials, and fundamentally towards the new system of orientation and monitoring of learning. We found one of the possible explanations for this resistance to the change to be the modifications that they have to incorporate into how they work on the subject.

Firstly, they have to replace their passive and receptive attitude by one that is more active and participative, in which the protagonism passes from the teacher or the content to the students and their system of seeking, selecting, and organizing information.

Secondly, continuous work is required from them, since the guidance and monitoring are not aimed at preparing them to pass an examination, and in particular not at concentrating this preparation in the two weeks prior to the examination date. The objective of the tutorials is to provide the students with strategies that facilitate self-regulation in their learning process and the attainment of greater autonomy.

Thirdly, they are asked to change their conception of learning as an individual and solitary activity, and accept new patterns of action based on collaboration and cooperative work. This change, however, involves modifying and reinforcing certain academic skills related to the acquisition of strategies that allow one to approach a given activity from different perspectives.

And fourthly, they have to conceive of monitoring and evaluation as being constructive actions aimed at facilitating and improving their learning, and not as a form of constant control.

4 CHALLENGES FACING THE IMPLEMENTATION OF VIRTUAL TUTORIALS

The difficulties and obstacles that we found in the course of our experiment of adapting to the EHEA and applying ECTS virtual tutorials led us to consider adopting a series of measures aimed at facilitating and promoting new formulas for monitoring learning, channeled through the Internet. Among these measures, we would highlight the following:

− Increasing the use and diversity of synchronous and asynchronous communication tools in tutoring. To this end, one must clearly define the content of the discussion fora and participation in them. One must also form the students into groups of 25–30 to be able to establish different IRC sessions and avoid the interferences and saturation that are inevitable when all the students are called to a single session (considering the large classes in our Psychopædagogy undergraduate courses).

− Reducing the number of students enrolled so as to be able to carry out individual monitoring and contribute to greater quality of the teaching and learning process.

– Giving priority to collaborative work and the acquisition of skills related to seeking, selecting, and organizing information, as opposed to individualist work and the reception of ready-made content.
– Institutionalizing the figure of the coordinator of the degree course, as well as of structures of coordination.
– Coordinating the method of the students' personal logging of their work.
– Fostering transversality and the interrelationship between subjects.
– Designing a 'Degree Course Counseling and Tutorial Plan' for Psychopædagogy.
– Introducing ECTS tutorial activities that foster and broaden the continuous evaluation of skills.
– Recognizing the increased teaching load in core and obligatory courses (with more than 80 students).
– Offering different models of inquiry, exploration, and experimentation, and fostering the acquisition of learning strategies and metacognitive strategies that will allow the prospective teacher to adapt to society's new situations and demands.
– Promoting coordination and collaboration between teachers.
– Facilitating access to and the availability of material and organizational resources. Among them, we would mention increased bandwidth, access to virtual platforms with a high capacity for downloading documents, the renovation of computer equipment, flexibility in scheduling and in grouping the students, etc.

5 CONCLUSIONS

Our experiment with virtual monitoring of learning gave results that augur very positively for its continuity. Outstanding among the conclusions we drew from the work was that not only did more students achieve a passing grade in *Psychology of Instruction* compared to the grades in previous years, but also that, as the students themselves observed, some of their working schemes changed and they acquired certain strategies which facilitated their study of this and other subjects. They also noted the benefit they got from the continuous nature of the guidance and evaluation. Amongst other aspects, they reported a greater involvement in the study and search for complementary information, that the on-line tutorials were an extraordinary aid to

resolving, almost immediately, the doubts that arose in their study and preparation of the curriculum, that it was indispensable for managing study time, etc.

In sum, when virtual tutorials have overcome the obstacles mentioned above, they will constitute one of the most accessible, rapid, and effective means of monitoring undergraduate learning.

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