Continuous assessment and support for learning: an experience in educational innovation with ICT support in higher education

César Coll, María J. Rochera, Rosa M. Mayordomo, Mila Naranjo

Dept. of Developmental & Educational Psychology,
University of Barcelona

Spain

Dr. César Coll. Dpto. de Psicología Evolutiva y de la Educación, Universidad de Barcelona, Passeig de la Vall d'Hebron, 171. 08035 Barcelona, Spain. E-mail: ccoll@ub.edu

Abstract

In this article we present and discuss an integrated system of continuous assessment (ISCA) in higher education, designed to collect multiple evidences of students' knowledge and abilities, and to facilitate monitoring and support of their learning processes. Inspired by a socio-constructivist approach, which assumes a close relation between teaching, learning and assessment, this system combines different types of activities, organized around blocks of broad themes, and aimed at acquiring information on content comprehension as well as its application and functional use in authentic contexts.

The educational innovation experience which constitutes the framework in which this system was developed and applied took place during the 2005-2006 school year. It was carried out in three class groups of "Educational Psychology", a mandatory course for the Bachelor's degree in Psychology, based on ECTS (*European Credit Transfer System*), using a teaching methodology focused on the student, and the support of information and communication technology (ICT). The experience was planned and developed by the consolidated group for teaching innovation in educational psychology (GIDPE) at the University of Barcelona. Results uphold a positive assessment of students' academic achievement, as well as their satisfaction with participation in the experience.

Two conclusions are worthy of mention. The first is that the ISCA proved to be an effective instrument, useful for acquiring evidence of the learning processes and for administering and managing different educational helps to students in these processes. The second is that the strength and usefulness of the ISCA consists in the integration of options and criteria as a whole rather than in applying any one criterion or option separately.

Introduction

Higher education has evolved in recent years toward incorporation of new, alternative evaluation systems (as compared to traditional ones), systems with names such as "authentic assessment", "performance assessment" or "alternative assessment" (Ahumada, 2005; Biggs, 2005; Birembaum et al., 2006; Diaz Barriga, 2006). These systems share a new way of understanding the assessment process to the extent that they are focused on learning situations from real life and on significant, relevant, complex problems which require demonstrating the use of an entire set of knowledge, skills and attitudes much broader than can be displayed through oral or written exams with brief or extended responses.

On the other hand, the need to identify generic or cross competencies as well as profession-specific competencies has been one of the challenges and objectives put forward in the framework of the European convergence process. Competency here is understood to mean an adequately-learned ability to perform a task, function or role relating to a particular work context – in this case in the area of Educational Psychology – which integrates knowledge, skills and attitudes (Roe, 2003; de la Fuente et al., 2005; VV.AA., 2005). Identification of the role and tasks which an educational psychologist performs, comprehension of educational psychology texts, application of psychoeducational knowledge to educational situations and cases, cooperative work, and regulation of individual and group work and learning are some of the competencies which students of Educational Psychology should learn.

The process of European convergence has also prompted implementation of teaching methodologies centered on students's autonomous work. Toward this end, it is considered necessary for students to have competencies for regulating individual and group work, for establishing learning goals, planning courses of action, selecting suitable strategies and resources, persisting in the resolution, review and reorientation of tasks in order to meet predetermined objectives. As numerous studies have shown (Torrano & González, 2004), self-regulation is a complex process where diverse factors intervene, including cognitive and meta-cognitive, affective, motivational and volitional (Pintrich, 2000); the same can be said of the other competencies mentioned. In this context, continuous evaluation systems offer teachers the chance to follow the students' learning process with precision and to gather multiple evidences of results attained and the degree to which they have developed competencies (Delgado et al., 2005). From our perspective, the central question consists of designing and incorporat-

ing evaluation systems into university teaching which not only facilitate gathering this evidence, but which teachers can also use to adequately support students in acquiring and using autonomous regulation competencies of their individual and group learning processes (Boekaerts, 1999; Allal & Wegmuller, 2004). In summary, the teacher's follow-up, tutoring and support for students' work is of great importance and doubtlessly constitutes one of the fundamental elements for success in teaching and learning processes.

The need to use evaluation for pedagogical ends – without necessarily overlooking or undervaluing the importance of final credentials – has been highlighted by numerous authors (see, for example, Schunk & Zimmerman, 1998; Coll & Onrubia, 1999; William, 2000; Broadfoot & Black, 2004; McDonald, 2006). This perspective emphasizes not only "assessment of learning", but also, and especially, "assessment for learning" (Birembaum et al., 2006), accentuating the developmental function of assessment (Nunziati, 1990; Allal, 1991) and the importance of providing students with information about their own learning process, as well as possible ways for improving it.

In this context there are several studies which have focused on applying ICT to managing and driving learning assessment of students in higher education (for example, Lara, 2001, 2003; Rodríguez, 2002). A good share of these studies is oriented toward use of ICT as an instrument for assessing learning. In the study presented here, however, ICT is used more as a support to a continuous assessment system with developmental purposes, as a support to students' reflection and regulation about their learning process, and with formative purposes, as a support to the teacher's tutorial work over students' learning.

Starting from a perspective that relates assessment to educational help in promoting learning, the present study has three objectives: (i) to introduce and discuss fundamental criteria and options which uphold an integrated system of continuous evaluation (ISCE) in higher education; (ii) to illustrate this system through describing an experience in teaching innovation supported by a case analysis methodology and by use of ICT incorporated into continuous assessment; and (iii) to introduce and discuss some particularly important results of this experience from the point of view of continuous assessment.

Designing a continuous assessment system integrated into learning activities: options and criteria

The experience of incorporating an integrated system of continuous assessment into a given university teaching practice forms part of a broader teaching innovation project[1] developed by the *Teaching Innovation Group in Educational Psychology* at the University of Barcelona[2]. The experience was carried out over the 2005-2006 school year in three experimental groups with a total of 186 students in the "Educational Psychology" course, a required core subject from the 5th semester of the Bachelor's program in Psychology at the University of Barcelona. This subject has been designed in ECTS credits (*European Credit Transfer System*), using a case analysis and problem-solving methodology and with the support of technological tools offered by the Moodle[3] virtual platform. Use of this platform has enabled a blended context of teaching and learning which combines face-to-face and distance, as well as the use of some available resources so that students might reflect on their work and their learning and that the teacher may guide and oversee this process.

The assessment system is based on a theoretical perspective linked to socio-cultural constructivism (Coll, Martín & Onrubia, 2001), according to which assessment, educational help and learning are closely related. From this perspective, assessment is considered to be a fundamental instrument by which the teacher can regulate his or her teaching activity along the way and by which the student can regulate his or her own learning process (Mauri & Rochera, 1997). As explained below, in order to fulfill this role, assessment activities are to be inserted into teaching and learning activities, organized and sequenced around broad thematic areas, and teachers encouraged to provide follow-up, support and tutoring to students during the development of assessment activities.

---

[1] "L'ensenyament de la psicologia de l'educació des de la perspectiva de la convergència europea: una proposta basada en el treball de l'alumne i en l'ús de les noves tecnologies de la informació la comunicació" [Teaching Educational Psychology from the perspective of European convergence: a proposal based on students' work and the use of ICT] (Reference 2003 MQD 00149. Director: C. Coll. *Convocatòria d'ajuts per al finançament de projectes per a la millora de la qualitat docent de les universitats catalanes corresponent a l'any 2003*).

[2] http://www.ub.edu/grintie/

[3] The Moodle platform (http://moodle.org) is distributed under an open code license (GNU Public License) and due to its flexibility can generate diverse settings for teaching and learning.

Integration of assessment activities in the students' learning activities

We understand assessment as an element inherent in the process of teaching and learning and as an instrument at the disposal of this process. The two reasons which justify this statement are: (1) the fact that situations and activities used for identifying and assessing what students have learned constitute the nexus between the teaching process laid out by the teacher and the knowledge construction processes performed by students (Coll, Martín & Onrubia, 2001); and (2) the fact that assessment activities must be coherent with the other elements which make up the teaching and learning process, especially with objectives and with activities presented throughout this process (Wiliam, 2000; Hargreaves, Earl & Schmidt, 2002; Dochy, 2004; Norton, 2004). From this perspective, if we seek to assess not only the conceptual knowledge of students, but also their skills in real contexts (Shepard, 2000), it is necessary to integrate assessment in the very learning process that students are carrying out while they perform teaching and learning activities.

According to these criteria, in this particular innovation experience, teaching and learning activities are at the same time assessment activities. Activities are not designed according to single topic units, but rather into a thematic block which connects one or more topics. Each thematic block proposes a set of continuous assessment activities which require *the students* to produce different products in a complex case analysis or problem-solving situation. Furthermore*,* students fill out individual and group self-evaluation reports about their own working and learning process at the end of each thematic block. At the same time, continuous assessment activities are planned in such a way as to facilitate *the teacher's* follow-up of the students' work process, by producing written reports to be returned to students and by performing follow-up tutoring based on assessment results from each thematic block. All these aspects are presented in greater detail in the sections which follow.

In this way the continuous evaluation system seeks to fulfill its pedagogical claims: on one hand, helping teachers to make decisions which improves their teaching practice, as it relates to the student learning, and to make adjustments to their educational assistance as a function of the progress, difficulties or relapses which students experience (formative assessment); on the other hand, helping students make decisions based on improving their learning activity (developmental assessment).

Organization and sequencing of assessment activities around thematic blocks

In order to encourage students to approach knowledge from a more functional, global sense, it seemed right to separate the work from this academic course into broad content units. Thematic blocks are content groupings or nuclei which are meaningful in themselves, and learning them can contribute decisively to developing the competencies of Educational Psychology. Within the framework of each thematic block, there are teaching and learning activities aimed at understanding the knowledge and applying it in simulated real contexts. These activities, as indicated above, are at the same time assessment activities which allow teachers to collect information on the extent to which students reach an understanding of the content and on their ability to use what they have learned.

Four thematic blocks were established, these are addressed through the presentation and resolution of a case or problem typical to the demands and tasks of school psychology: fulfilling the functions and tasks of a school guidance counselor at a Secondary Education school (thematic block 1); preparing a talk addressed to parents on the relationship between intelligence, learning strategies and school performance, within the framework of a "Parenting School" (thematic block 2); preparation of an interview with a child's teacher, where the child is showing lack of interest and motivation for learning (thematic block 3); and finally, helping teachers in the process of attention to diversity in the classroom (thematic block 4).

Assessment activities follow a single sequence, with minor variations, for the four thematic blocks. As is seen in Table 1, the sequence includes different evaluation activities aimed at gathering information not only about student's comprehension of the content, but also and especially about their "performance" ability. In sum, the sequence is organized such that students can demonstrate an increasingly expert approach and resolution of the cases or problems presented as they progress in their comprehension and assimilation of the content covered in the thematic block. Additionally, this organization allows the teacher to offer, within the framework of this sequence, a set of diverse aids – direct and indirect, in person or through ICT – which are aimed at improving the students' learning process.

Table 1. Sequence of evaluation activities and diversity of educational helps

Integrated, continuous evaluation system in higher education (ICESHE)	
Type and sequence of evaluation activities (in each thematic block)	**Type and sequence of educational helps (in each thematic block)**
Initial evaluation activities	*Helps aimed at raising students' awareness of the initial definition of the situation. Creation of a common definition shared between teachers and students.*
• Initial responses -individual and/or group- to case analyses	• Students get a first representation of the case or problem and become aware of the need for a deeper understanding than their current knowledge. • The teacher collects information about students' prior knowledge and their initial representation of the case or problem, thus providing him or her with a baseline and an anchor point for teaching.
Process evaluation activities	*Helps aimed at the control, evaluation and improvement of learning*
• Glossaries • Conceptual maps	• Follow-up and tutoring the work process in face-to-face situations or through communication tools provided through the Moodle platform.
Final evaluation activities	
• Final responses and their comparison with initial responses • Individual and group completion of self-evaluation questionnaires for each thematic block	• Preparation of written reports on the results of the evaluation for each thematic block, including information about the correction criteria and the degree of goal attainment, with guidance for improving learning. • Tutoring sessions with feedback of results, in face-to-face and online situations

Carrying out these activities implies placing the student in simulated real contexts which allow him or her to relate theory to practice and use the acquired knowledge in a contextualized fashion, while at the same time encouraging attainment of certain competencies required by the professional practice of an educational psychologist. However, the potential of such situations of case analysis or problem solving to enable development of professional competencies will only be effective to the extent that students are provided with the educational assistance necessary for them to successfully address or resolve the case or problem in question. This assistance can be facilitated through use of ICT (Mauri, Colomina & Rochera, 2006).

In this sense, several conditions must be met in order to address the cases or problem situations which are the backbone of the thematic blocks. These include: the learning of significant, core knowledge; performing individual and group tasks linked to solving the case or

problem; collection of information on the students' learning process and feeding back to them an assessment; as well as follow-up and help from the teacher at different stages in the process.

Teacher support, follow-up and tutoring during the completion of assessment activities

Taken as a whole, the sequence of assessment activities which we have just mentioned provides students with opportunities for acting autonomously in real, complex situations and problems (even though in a simulated context), planning courses of action, deciding what knowledge must be used and how they should use it in resolving the case or problem, comparing the initial, tentative resolution with the final resolution, reflecting on the course of action followed and thereby reorienting the learning process itself. In our experience, however, students are unlikely to learn to make optimal decisions if they do not receive necessary support and help at specific moments in the process, especially in initial stages, and if this support and help does not evolve, gradually being reduced and withdrawn as students' ability to work and learn autonomously increases. In this context, assessment activities become privileged occasions for teachers to provide ongoing support to the students' work and learning process as needed.

In order to obtain evidence of the learning process which students are following, teachers use different instruments and resources enabling them to provide follow-up and support to individual and group work while assessment activities are under way, whether directly or indirectly, in-person or online. On one hand, the teacher plans and carries out a series of in-person sessions, some mandatory and some optional, for each thematic block; these facilitate observation of students' production process. Over the course of these sessions, small groups of four to six student members address resolution of the case, construction of a glossary, and elaboration of a conceptual map. This way, they plan resolution of tasks, they share and exchange meanings, they identify difficulties and propose solutions. At the same time, the teacher can follow their process in some detail and offer different types of support – further explaining the instructions, providing additional information, resolving doubts, etc. — all aimed at encouraging conscious, reflective and self-regulating activity in students.

The didatic guide for each block, the mandatory readings, reading guidelines and support materials (topic outlines, further readings, tutorials for constructing conceptual maps, etc.), were among the indirect aids offered to students in each thematic block; all of these were

permanently available in the virtual classroom for the course, constructed on the Moodle platform. The virtual classroom (see Figure 1) also offers a set of online spaces and technological resources that can be used by students to plan and regulate their own learning process (notetaking, automatic activity records, guidelines for reflection, detailed planning calendars for the work sessions, etc.).   It also allows the teacher to carry out continuous assessment supported by multiple evidences (both group and individual activities and tasks, online activity registers, contributions to the general subject forum, to the small-group forums and to the collaborating editor, etc) and to provide constant assistance, follow up and guidance to the learning process as deemed appropriate from the evidence gathered (on line tutorials; returned assignments, corrected and assessed; follow up and intervention in small group forums; the general forum, or the collaborating editor, etc.).
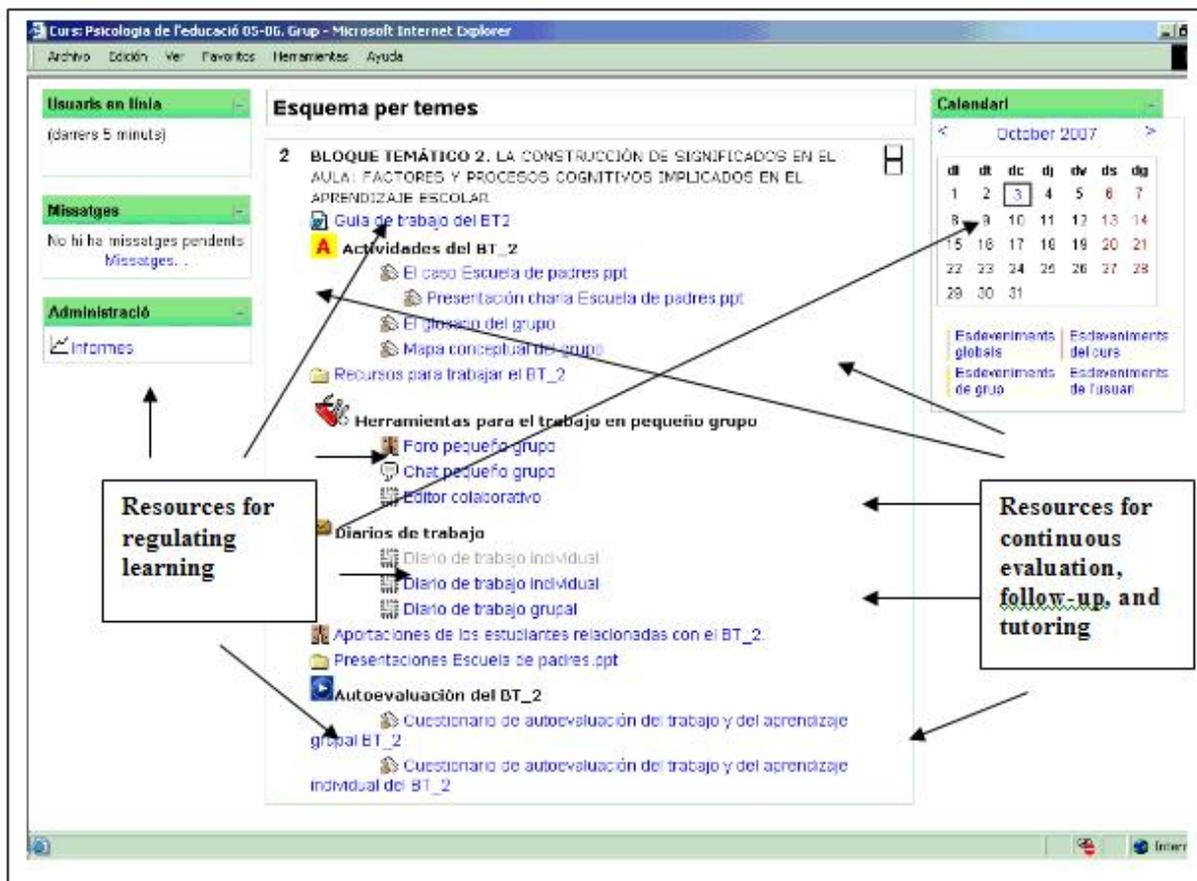

Figure 1. Main screen of the Educational Psychology virtual classroom

These technological resources and virtual spaces facilitate observation of joint knowledge construction processes among the students, processes which otherwise might remain inaccessible to the teacher.   Obviously, monitoring this work and communication spaces

means additional work and a considerable time investment for teachers and for students, as is seen in the Results section. However, this is compensated for by significant improvement in gathering evidence of students' progress and difficulties in the learning process, and the "expansion" of channels for tutoring and support which is very difficult to attain in teaching and learning activities done exclusively in person (Onrubia, 2005).

One especially interesting and useful resource for promoting learning through assessment is, at the end of each thematic block, the preparation and submission of a report on results of learning. This report is organized into the following sections: (i) assessment criteria which take into account how well assignments were completed (corresponding to an assessment scale of A, B, C, D); (ii) detailed assessment of work in relation to the criteria; (iii) evaluation of the responses to questionnaire items of the group self-assessment; (iv) evaluation of the responses to questionnaire items of the individual self-assessment and guidelines for revising and improving the activity; and (v) a proposal of in-person and online tutorial situations for discussing the report.

Table 2 summarizes the set of relative criteria within the global assessment system which was designed. In the first column are basic criteria of the assessment system and in the second are the options, resources and instruments which give shape to each of them.

Table 2. Options, criteria and resources in the integrated, continuous evaluation system

Basic options of the evaluation system	Criteria and resources of the evaluation system
Continuous evaluation supported by multiple evidence	-Embedding evaluation activities in students' learning activities -Evaluation with formative and developmental purposes. Actions aimed at improving teaching assistance and regulation of learning.

Sequencing evaluation activities in each thematic block and through the thematic blocks themselves	-Theoretical-practical integration: the thematic blocks.
	-Organization of evaluation activities around broad thematic blocks which are approached through analysis and resolution of cases or problems.
	-The combination of activities aimed at understanding the content and its application in simulated contexts.
	-The combination of individual and group activities.
	-Students' elaboration of different *products* in each thematic block:
	    -initial case resolution (*initial diagnostic evaluation*),
	    -glossary of concepts and conceptual map (*formative evaluation during the process*)
	    -final case resolution and reflection on the elaboration process (*final evaluation*).
	-Gradual increase in autonomy in elaboration of products in successive thematic blocks.

	-Use of ICT as a resource for collaboration among students: collaborative work spaces.
The teacher's support, follow-up, and tutoring during realization of evaluation activities	-Observation and tutoring during performance of evaluation activities, in both mandatory and optional face-to-face sessions -Follow-up and evaluation of the individual and group self-evaluation questionnaires completed at the end of each thematic block -The support of ICT as a resource for continuous evaluation. Use of different visual spaces in the Moodle virtual classroom (general forum, small group forums, collaborative editor, automatic records, messaging and online tutoring, etc.) in order to facilitate students' work and its ongoing supervision and support. -The teacher's preparation of written reports addressed to students at the end of each thematic block: criteria for correction and evaluation of the assigned products, evaluation of answers to the individual and group self-evaluation questionnaires, proposed guidelines for revising and improving one's learning. -Follow-on tutoring sessions performed in person or on line in order to feed back the results of the evaluation.

Results

Results from the experience show improvement in *students' final performance* (N= 186) for the course both in terms of the number of students who passed their final exams at first attempt as well as in the mean and distribution of grades. Table 3 shows that 90.81% of students pass the subject and 75.8% do so with a grade of A or B[4].

Table 3. Performance of students in the experimental groups (Grade received)

|		
A	23	12.36%
B	118	63.44%
C	28	15.05%
Fail	2	1.07%
Drop out or No show at final exam	15	8.06%
Total	186	100%

In order for students to evaluate their participation in the experience, a 28-item questionnaire was prepared (23 items on a scale of 1 to 5, and 5 short-answer items). The follow-

---

[4] In prior schoolyears when an assessment system was used with an equivalent final exam, the percentage of students passing at first attempt usually fell between 60% and 70%. Since it is impossible to obtain exactly equivalent data for the different groups, it is unadvisable to calculate the statistical significance of the differences between these percentages and those presented in Table 3.

ing aspects were addressed: the type of activities and tasks used in this methodology; the thematic block structure; the different types of aid offered for orienting and facilitating learning; the methodology of case analysis and resolution; the types of cases presented; the use of different resources from the Moodle platform; how these resources contributed to different learning processes; cooperative work in small groups; the continuous assessment system; activities for reviewing the planning of one's individual work; the amount of time required; and a global evaluation of the approach and realization of the course. This questionnaire was answered individually and anonymously by a total of 115 students at the end of the year. Even though an exhaustive analysis of all questionnaire items was carried out, here we present only those related directly to the topic of continuous assessment as an instrument for optimizing pedagogical assistance. Let us recall, in this respect, that students' opinion of their degree of satisfaction with learning processes in which they participate is normally considered one of the fundamental dimensions to consider for improving quality of education (González, 2006).

First, we present students' evaluation of some aspects of the experience. Figure 2 shows graphically the response to the following question: "*Taking into account all the aspects considered throughout the questionnaire, your global assessment of the approach and realization of this course is: not satisfactory, minimally satisfactory; neutral; quite satisfactory; very satisfactory*". More than half the participants (59%) rate the approach and realization of the course as "quite satisfactory". The fact that only 1% of students make a global assessment of "not satisfactory" is especially interesting.
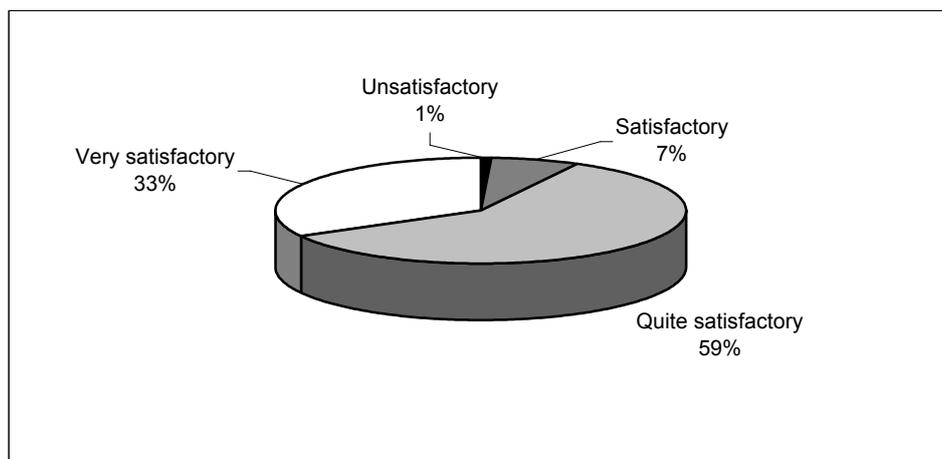
Figure 2. Global assessment of the course approach and realization.

As Figure 3 shows, the usefulness of the continuous evaluation system is generally rated very positively. The question in this case is: "*Rate the degree to which you consider that the continuous evaluation system in this course has helped you: to work more continuously and systematically; to read systematically and in depth; to heighten your interest and motivation; to better regulate your learning process; to improve communication with the teacher; to improve the meaningfulness of your learning*" (assessment scale: very little, a little, some, quite a bit, very much). Out of all these, "*to read systematically and in depth*" (very little 0%; a little 0%; some 1.74%; quite a bit 31.30%; very much 66.96%) and "*to work more continuously and systematically*" (very little 0%; a little 0%; some 0.87%; quite a bit 27.83%; very much, 71.30%) are those most often mentioned. "*to increase participation in class*" (very little 2.61%; a little 10.43%; some 33.04%; quite a bit 34.78%; very much 19.13%) and "*to heighten your interest and motivation*" (very little 1.74%; a little 7.83%; some 24.35%; quite a bit 44.35%; very much, 21,74%) are those least supported when assessing the usefulness of the evaluation system.
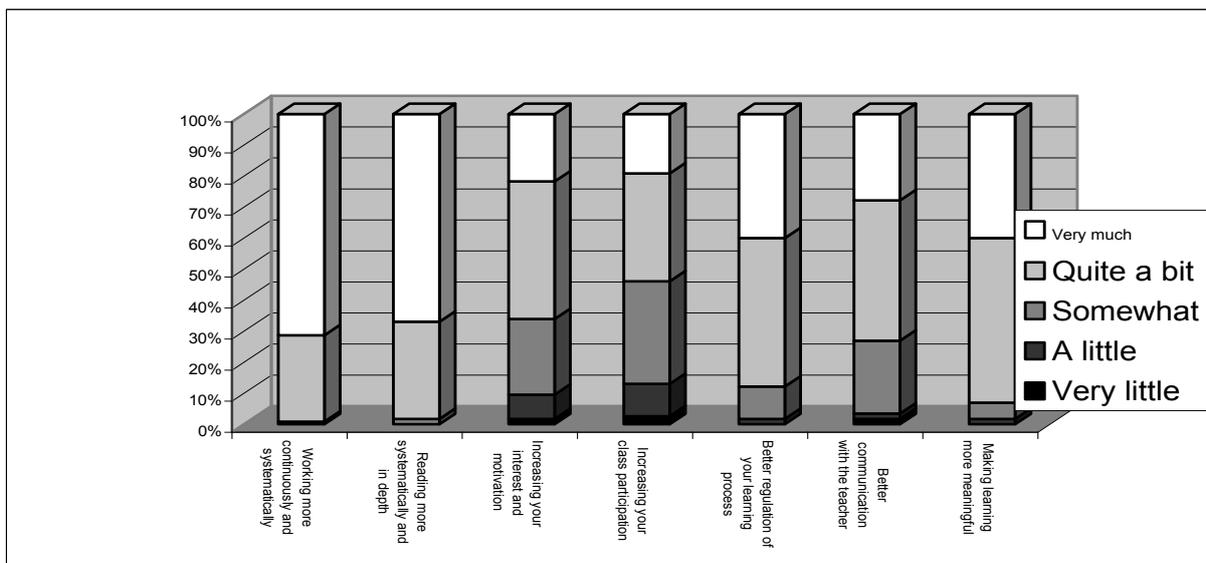

Figure 3. Assessment of the continuous evaluation system

One of the key aspects for recognizing how teachers exercise their educational influence throughout the process is to look at the different kinds of help they offer to students and how these are valued by the latter (see Figure 4). The question asked of students was: "*Different types of help and support were made available during the course in order to accompany, to guide and to facilitate learning. Rate the degree to which you consider that each of these ac-*

tually benefited your learning: didactic guide; mandatory readings; reading guidelines; support material; group discussion sessions with the teacher; Moodle platform; face-to-face communication with the teacher; final reports" (assessment scale: very little, a little, some, quite a bit, very much). In this area, the first interesting result is that almost all helps were rated very positively, although the most highly rated are "mandatory readings" (very little 0%; a little 0%; some 1.74%; quite a bit 42.61%; very much 52.17%), the "group discussion sessions with the teacher" (very little 0%; a little 2.61%; some 8.70%; quite a bit 47.83%; very much 40.87%) and the "support materials" (a little 0.87%; a little 0%; some 15.65%; quite a bit 60.87%; very much 22.61%). Lower ratings were given to the "Moodle platform" overall (very little 14.78%; a little 20.87%; some 32.17%; quite a bit 23.48%; very much 6.96%), the "reading guidelines" (very little 6.09%; a little 14.78%; some 32.17%; quite a bit 39.13%; very much 7.83%) and the "didactic guide" (very little 3.48%; a little 9.57%; some 29.57%; quite a bit 39.13%; very much 17.39%).
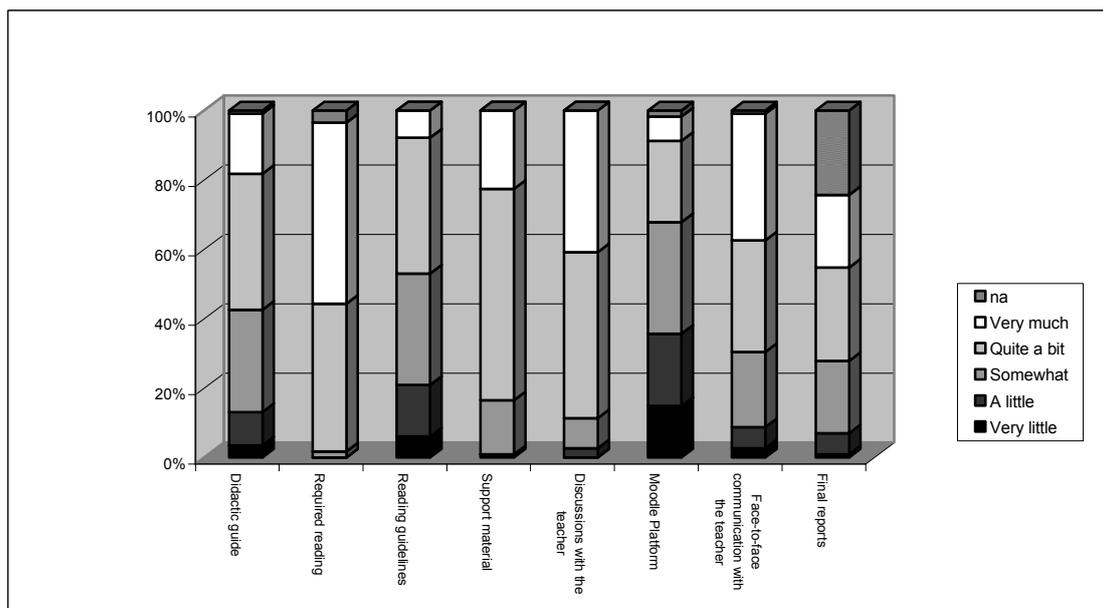
Figure 4. How much the different types of helps contributed to learning

Finally, we cannot overlook the *"cost"* involved in participating in this experience. Thus Figure 5 shows graphically the response to this question: *"Taking the whole semester into account, estimate the weekly hours that, on average, you have dedicated to working on this subject in small groups (not counting mandatory hours of class attendance)"*. As for the number of weekly hours required for class study and work, most students tell us that they

spend – in addition to classroom hours – about 10 hours, half on individual work and the other half on group work. In percentages, 52.7% say they spent between 6 and 10 hours on average per week, 30.43% between 11 and 15 hours, and 5.22% between 16 and 20 hours. One noteworthy data point is that most students (63%) affirm that they could only adequately keep up with 2 simultaneous subjects with the same amount of work and dedication that they have devoted to this one; 15% consider that they could keep up with three, and 6% with four. Taking the above data as a reference, and adding on mandatory classroom hours, the total hours which students dedicate to course work would be on average about 200 hours. The initial design predicted a total of 185 hours, such that the design should be slightly reduced in order for students' reported hours of work to coincide with course design predictions.
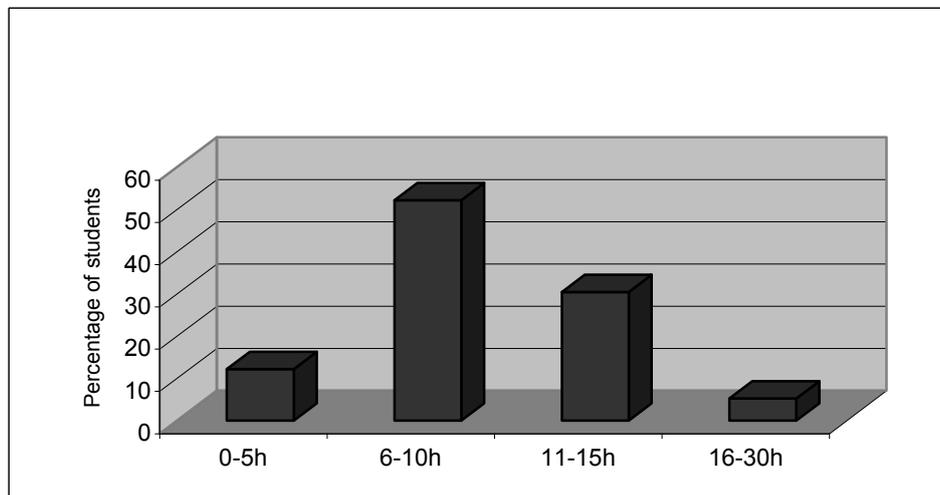
Figure 5. Estimate of hours spent weekly on individual and small-group work

For their part, teachers report that this type of class design and development involves a considerable increase in the volume of work for teaching; they point to the increase in demands coming from implementation of the continuous evaluation system and the follow-up and support for students' individual and group work (supervision of student contributions, with an average frequency of three or four times per week, follow-up and tutoring in the process of completing assignments and of work turned in the virtual classroom and in person, etc.).

Conclusions

Results from this experience show that continuous evaluation activities can be useful instruments for collecting multiple, diverse evidence of students' learning and for providing

well-suited educational helps which encourage attainment of learning.

The potential usefulness of continuous evaluation activities, in our experience, lies in the *set* of options, criteria and resources which support the system in its totality, more than in the use of any one of these elements considered in isolation. Integrating evaluation activities within the framework of learning activities, organizing them around broad thematic blocks, combining activities for assessing knowledge comprehension with others involving its application in real-life situations—complex and relevant—and increasing possibilities for offering follow-up and continuous support for students' learning process and its results, are all actions which generate an optimal context for improved learning.

For the continuous evaluation system to really take its place as an instrument that promotes learning depends on fulfilling a series of conditions, both educational and institutional. On one hand, use of student knowledge, skills and attitudes should be encouraged through the design of situations that simulate real, complex problems. These situations should promote a process of reflection that extends from the retrieval of prior knowledge, as prompted by the initial formulation of the case, through to its final formulation, after having gone through successive revisions. A continuous evaluation system with these characteristics requires high levels of student involvement and effort that are only reached, and especially maintained, when they manage to attribute meaning to what they are learning and to the situations in which they are learning it (Coll, 2004). In the case of the present experience, results indicate that students found meaning in involving themselves in case resolution which simulates common situations faced by the school psychologist in his or her professional practice.

Along these lines, results show that students gave lesser value and meaning to certain instruments specifically designed for encouraging and regulating learning, such as the individual and group self-evaluation questionnaires. One of the factors which helps explain the low value attributed to these questionnaires is that the dominant evaluation culture in higher education encourages students to be more involved in activities which "count" more highly for their final class grade, such as resolution of the case-problem and the elaboration of the glossaries and conceptual maps, as opposed to answering some self-evaluation questionnaires whose relevance for the final grade was perceived to be considerably less or even null.

Regarding the low global value which students assign to the *Moodle* platform, it is

best to consider this in the light of other more specific results obtained from the same questionnaire. These results point out a higher value for ICT as a resource for continuous access to activities and materials for a problem situation, and lower value as a resource for communication with the teacher and classmates. These results may be interpreted more properly if it is understood that the *Moodle* platform was used in the experience as support to in-person teaching in the framework of a hybrid teaching-learning context. In our opinion, the pedagogical and didactic value of certain uses of ICT, such as communication or collaborative learning uses, may increase significantly if effective conditions are created, different than those commonly existing in face-to-face situations.

On the other hand, in order for the continuous evaluation system to fulfill its function as a support for improved learning, it is not enough to create optimal conditions for promoting students' involvement in carrying out evaluation activities. In addition, in the work that students are performing individually or in groups, in person or using ICT, the teacher's tutoring, follow-up, and support emerge as the fundamental elements for continuous evaluation to be successful.

Finally, based on of the increased volume of work involved in implementting an evaluation system such as what we have presented here, one must insist on the need to improve conditions under which university teaching takes place, including how teaching hours are defined and counted, recognition for teaching as compared to other duties of university faculty members, and the number of students per class group. These and other institutional conditions are essential in order to ensure the introduction, effectiveness and sustainability of continuous evaluation in higher education and, by doing so, to make progress in improving the quality of university teaching.

References

Ahumada, P. (2005). La evaluación auténtica: un sistema para la obtención de evidencias y vivencias de los aprendizajes. [Authentic evaluation: a system for gathering learning evidence and experiences.] *Perspectiva Educacional*, *45*, 11-24.

Allal, L. (1991). *Vers una pratique de l'évaluation formative*. [On the practice of formative evaluation.] Brussels: De Boek.

Allal, L., & Wegmuller, E. (2004). Finalités et fonctions de l'évaluation. [Purposes and functions of evaluation.] *Educateur (special issue 04)*, 4-7.

Biggs, J. (2006). *Calidad del aprendizaje universitario*. [Quality of university learning.] Madrid: Narcea.

Birembaum, M., Breuer, K., Cascallar, E., Dochy, F., Dori, Y., Ridway, J., Wiesemes, R. & Nickmans, G. (2006): A Learning Integrated Assessment System. *Educational Research Review, 1*, 61-67.

Boekaerts, M. (1999). Self-regulated learning: where we are today. *International Journal of Educational Research, 31*, 445-457.

Broadfoot, P. & Black, P. (2004). Redefining assessment? The first ten years of "Assessment in Education". *Assessment in Education, 11* (1), 7-27.

Coll, C. (2004). Esfuerzo, ayuda y sentido en el aprendizaje escolar. [Effort, help and meaning in school learning.] *Aula de Innovación Educativa, 120*, 36-43.

Coll, C., Martín, E. & Onrubia, J. (2001). La evaluación del aprendizaje escolar: dimensiones psicológicas, pedagógicas y sociales. [Evaluation of school learning: psychological, pedagogical and social dimensions.] In C. Coll, J. Palacios & A. Marchesi. *Desarrollo psicológico y educación*, 549-572. Madrid: Alianza Editorial.

Coll, C. & Onrubia, J. (1999). Evaluación de los aprendizajes y atención a la diversidad. [Evaluation of learning and attention to diversity.] In C. Coll (Coord.), *Psicología de la instrucción. La enseñanza y el aprendizaje en la educación secundaria*, 141-168. Barcelona: Horsori / ICE de la UB.

De la Fuente, J., Justicia, F., Casanova, P.F. & Trianes, M.V. (2005). Perceptions about the construction of academic and professional competencies in psychologists. *Electronic Journal of Research in Educational Psychology, 3* (1), 3-34

Delgado, A. M., Borge, R., García, J. Oliver, R. & Salomón, L. (2005). *Competencias y diseño de la evaluación continua y final en el Espacio Europeo de Educación Superior. Programa de Estudios y Análisis (EA2005-0054)*. [Competencies and design of con-

tinuous and final evaluation in the European Space for Higher Education. Studies and Analysis Program.] Madrid: Ministry of Education and Science. Dirección General de Universidades.

Díaz, F. (2006). La evaluación auténtica centrada en el desempeño: una alternativa para evaluar el aprendizaje y la enseñanza. [Authentic evaluation, focused on performance: an alternative for evaluating learning and teaching.] In F. Díaz (Coord.), *Enseñanza situada: vínculo entre la escuela y la vida* (pp. 125-163). México: McGraw-Hill.

Dochy, F. (2004). *Assessment engineering: aligning assessment, learning and instruction. Keynote presentation.* Accessed on May 31, 2006 from http://www.assessment2004.uib.no/keynotes/dochy.page

González, I. (2006). Dimensions for evaluating university quality in the European Space for Higher Education. *Electronic Journal of Research in Educational Psychology, 4* (3), 445-468.

Hargreaves, A., Earl, L. & Schmidt, M. (2002). Perspective on Alternative Assessment Reform. *Amercian Educational Research Journal, 39* (1), 69-95.

Lara, S. (2001). *La evaluación formativa en la Universidad a través de Internet: aplicaciones informáticas y experiencias prácticas.* [Formative evaluation at university through Internet: computer applications and practical experiences.] Pamplona: Eunsa, Ediciones de la Universidad de Navarra.

Lara, S. (2003). La evaluación formativa a través de Internet. [Formative evaluation through Internet.] In Cebrián, M., *Enseñanza virtual para la innovación universitaria.* Madrid: Narcea, 105-117.

Mauri, T., Colomina, R. & Rochera, M.J. (2006). Análisis de casos con TIC en la formación inicial del conocimiento profesional experto del profesorado. [Case analysis using ICT in initial teacher training in practitioners' knowledge and expertise.] *Revista Interuniversitaria de Formación del Profesorado, 20* (3), *57,* 219-232.

Mauri, T. & Rochera, M.J. (1997). Aprender a regular el propio aprendizaje. [Learning to regulate one's own learning.] *Aula de Innovación Educativa, 67,* 48-52.

Mcdonald, R. (2006). The use of evaluation to improve practice in learning and teaching. *Innovations in Education and Teaching International, 43* (1), 3-13.

Norton, L. (2004). Using assessment criteria as learning criteria: a case study in psychology. *Assessment and Evaluation in Higher Education, 29* (6), 687-702.

Nunziati, G. (1990). Pour construire un dispositif d'évaluation d'aprentissage. [Towards building an application for evaluation of learning.] *Cahiers Pédagogiques, 280,* 47-64.

Onrubia, J. (2005). Aprender y enseñar en entornos virtuales: actividad conjunta, ayuda pedagógica y construcción del conocimiento. [Learning and teaching in virtual environments: joint activity, pedagogical help, and knowledge construction.] *RED. Revista de Educación a Distancia, número monográfico II*. Accessed on May 28, 2005 from http://www.um.es/ead/red/M2/

Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 451-502). San Diego, CA: Academic Press.

Rodríguez, M. J. (2002). *Aplicación de las TIC a la evaluación de alumnos universitarios*. Ediciones de la Universidad de Salamanca. Accessed on Sept. 29, 2007 from http://www.usal.es/~teoriaeducacion/rev_numero_06_2/n6_02_art_rodriguez_conde.htm

Roe, R. (2003). ¿Qué hace competente a un psicólogo? [What makes a psychologist competent?] *Papeles del Psicólogo, 86*. Accessed on May 31, 2006 from http://www.cop.es/papeles/vernumero.asp?id=1108

Schunk, D.M. & Zimmerman, B. J. (eds.) (1998). *Self-regulated learning: From teaching to self-reflective practice*. New York: The Guilford Press.

Shepard, A.A. (2000). The role of assessment in a learning culture. *Educational Researcher, 29* (7), 4-14.

Torrano, F. & Gónzález, M. C. (2004). Self-Regulated Learning: Current and Future Directions. *Electronic Journal of Research in Educational Psychology. 2(1)*, 1-34.

VV.AA. (2005). *Libro Blanco. Título de grado en Psicología*. [The White Book. Undergraduate degree in Psychology.] ANECA.

Wiliam, D. (2000). *Integrating summative and formative functions of assessment. Keynote address. First Annual Conference of the European Association for Educational Assessment*. Prague, Czech Republic.

[Page left intentionally blank]