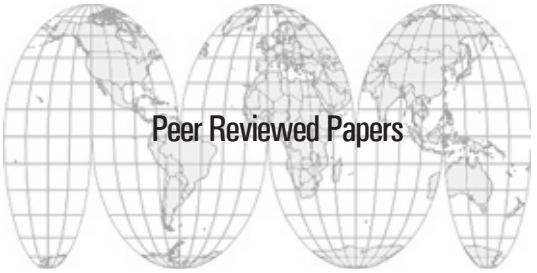

Peer Reviewed Papers

Integrating e-learning in company training programmes: an opportunity to increase the value of internal know-how

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Employee training is a need for every company, public corporation and organization. Filling this need requires a strong economic and organizational commitment.

Compared with traditional classroom training, e-learning gives increased flexibility in terms of time and place, permitting a reduction of direct and indirect training costs and the optimization of time spent on training. The possibility to personalize training courses lends itself to the fulfilment of learning objectives for a wide range of professional needs in large companies and organizations. Finally, an adequate involvement of company employees in the design, implementation, delivery and assessment phases of e-learning

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courses represents an opportunity for improvement and development of human resources within the organization itself.
With these considerations in mind, the Italian Revenue Agency has chosen to include e-learning in its training programme by implementing a pilot project.
This paper will outline the most significant aspects of the pilot project, underlining the choices made in defining the productive process and course didactics. There will also be a description of the contribution made by Revenue Agency experts and the role of e-learning tutors during course delivery, monitoring and assessment.

1 Introduction

The pilot project which the Revenue Agency began in November 2009, included the implementation of an e-learning course. This pilot course permitted an evaluation, from an operational viewpoint, of the decisions made at its planning stage in order to:

- identify the didactic models and instruments suitable to the learning needs and organizational structure of the Revenue Agency and fine-tune the guidelines to be followed for future e-learning projects;
- evaluate eventual problems in the productive process and to design an optimized work flow which would enable the "systematization of the entire process from knowledge-gathering and organizing, to the production of course-ware and its use." (Giacomantonio, 2007, p. 76);
- detail the roles of everyone involved in the project, clarifying the terms and times of their expected contributions and activating appropriate training actions and support where required.

Throughout the entire production process and while fine-tuning the didactic strategies involved, the Revenue Agency cooperated with the laboratory of e-learning technologies and methodologies (LABeL): a department of CATTID at "Sapienza" University of Rome. This is a research center which studies e-learning quality and efficacy. The laboratory is also active in the design and evaluation of e-learning training courses and their didactic systems. This cooperation was established as a result of the Revenue Agency's awareness that the construction of an e-learning training course necessitates specific competencies. Only if multi-medial instruments, interactivity and course-characteristics particular to e-learning are specifically designed, can they become effective tools which facilitate the learning process.

The pilot e-learning project adapted a traditional, classroom course which had previously been implemented by the Revenue Agency in order to use the information, data and experience which had already been gathered from a non e-learning approach. This data was used as input during the analysis and design phases. The choice of which course to adopt was based on variables such as:

number and duration of classroom sessions, learners' place of work, content updating rate, uniformity of users' existing skills, training network size and the target number of potential users. (Santilli, 2006).

Among the courses which were considered, the "Automatic Inspection of Tax Returns" course was considered most suitable for the project as it was seen to be:

- relevant to a working process of great importance to the Revenue Agency[1];
- pertinent to such a large number of potential users located throughout the entire country who could not all be reached by traditional classroom training;
- in need of annual updates which include legislative changes as well as those to be found in income tax return forms which Revenue Agency employees must be promptly trained to recognize.

2 Planning the productive process: who and what is involved

Once the course was chosen, the productive process was planned following ADDIE[2] Instructional Design model recommendations, as well as the guidelines published by CNIPA, now DigitPA (CNIPA, 2007). After comparing these two approaches and adjusting them to the specific training needs and characteristics of the Revenue Agency, it was possible to plan a work-flow and identify the activities necessary for implementation of each stage of the pilot project.

2.1 Sourcing strategy

The adopted sourcing strategy was a hybrid model (CNIPA, *op.cit.*) which would adapt some of the key roles already extant in the Italian Revenue Agency, with a view to making best use of their knowledge and experience and creating a team that would be able to develop similar projects in the future.

In particular, Revenue Agency personnel were employed as:

- Project Manager (Central Personnel Office, In-house Communication and Training Department);
- Subject matter experts (Central Directorate for Services to Taxpayers, Tax Returns Management Unit);
- E-learning tutors (chosen from various local training departments).

[1] The automatic inspection of the tax return is a complex verification activity aimed at correcting errors in the income tax return; in case of errors, a communication is sent to the taxpayer or to the withholding agent in order to avoid future errors, straighten out formalities, provide additional data or clarifications to the Revenue Agency

[2] ADDIE is an Instructional Design development methodology; the name is an acronym of the five phases that it comprises: Analysis, Design, Development, Implementation, and Evaluation (Eletti, 2002).

LABeL-CATTID provided methodological support, as well as collaboration, during the whole production cycle and also wrote the storyboards for self-study didactic units.

Sogei, an ICT company set up by the Economy and Finance Ministry, created the multimedia aspects of the self-study didactic units and Learning Management System (LMS).

3 Preparatory analysis: method and objectives

The pilot project started with an analysis phase aimed at gathering information necessary for the subsequent didactic planning of the course.

Close attention was paid to the following training activity aspects: target users; technological equipment; training objectives; content; cost and timing constraints (Dick, Carey, Carey, 2005).

The analysis was based on a series of conversations/interviews with in-house Communication and Training Department personnel, experts in the field and technicians.

4 Course design

The data accumulated during preparatory analysis was shared between the whole pilot project team. The team then focused on detailed planning of the training project. The didactic model developed for the pilot project included the use of a blend of assisted self-study and collaborative learning, in order to provide users with as much flexibility and autonomy as possible in organizing their learning activities, as well as to promote an active role for learners through a process of peer teaching and information exchange or through consultation with experts in each specific field. Self-assessment tools were also provided in order to allow users to verify their progress.

The course content was structured in progressive modules. The course was in fact divided into three modules, consisting of a total of ten multimedia interactive didactic units (figure 1), each lasting 15-20 minutes (this figure refers to the duration of the audio tracks).

The internal structure of each unit was designed following a three-step model (Bellagente, 2006): introduction (where a virtual tutor presents the topic and aims of the unit), presentation (audio-video presentation enriched with interactive activities and links to additional material, regulatory material, and glossaries), and practice (allowing users to assess their own progress, with prompt feedback).

Units can also be seen in text-format in order that users can review material previously accessed in audio-video or revise previously studied material

quickly.

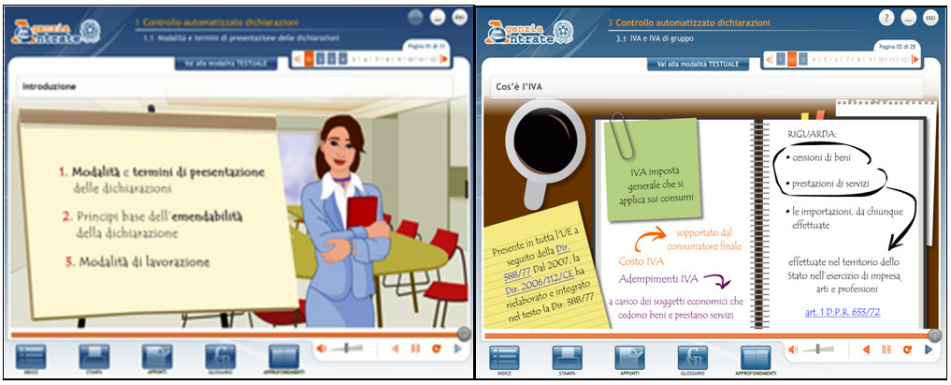

Fig. 1 - Example of material which appears on screen.

Two different delivery methods were adopted:

- completely online (48 classes, for a total of about 1600 users), based upon a combination of self-study materials (didactic units), self-assessment (tests and exercises), sharing tools (forum, chat), information and support (bulletin-board, news and teaching materials);
- blended (4 classes, for a total of about 130 users), including both real and virtual classroom activities, in addition to the instruments provided for completely online classrooms.

In order to allow students to attend the course with an adequate degree of flexibility, an eight- week calendar for completion of the course was foreseen, requiring an average study time of from three to four hours per week per student.

5 Subject matter: experts' contribution

Considering the highly specific subject matter of the course, a central role was played by the Revenue Agency's subject matter experts during the content design phase.

The creation of each unit followed these steps:

1. the Revenue Agency subject matter experts (Central Directorate for Services to Taxpayers, Tax Returns Management Unit) wrote the contents (and the additional materials) in text format, following guidelines and shared models;
2. the content was first revised by LABeL-CATTID's Instructional Desi-

gners and by the in-house Communication and Training Department of the Revenue Agency. The results of this first review were then re-submitted to subject matter experts;
3. once approved by the Agency's experts, the content was converted into storyboard format by LABeL-CATTID;
4. the storyboards were then validated by the subject matter experts and sent to Sogei ICT company for multimedia conversion;
5. the finished unit was checked and validated by both LABeL-CATTID and the Revenue Agency in-house Communication and Training Department.

5.1 The virtual classroom experience

Subject matter experts also acted as teachers in the 24 virtual classroom sessions delivered during the pilot project. Each session lasted about one hour and gave teachers and learners a vital opportunity to discuss the specific course content while obtaining prompt updates and a deeper understanding through simulations of real-life operations. The virtual classroom proved to be a particularly useful learning tool and was recognized as such by learners. Their positive comments regarding virtual classrooms which were posted in the various class forums and their active participation in all sessions well reflect this appreciation.

6 The role of e- learning tutors

The Docent Learning Management System (LMS) was used to deliver the pilot course. The platform monitors users' course attendance, in order to provide them with detailed organizational and methodological support. This support is provided by e-learning tutors: a network of thirty three experts selected from the training departments of all the Regional Offices and coordinated by the in-house Communication and Training Department.

E-learning tutor activity has different functions (Rivoltella, 2006; Salmon, 2000):

- motivational, to assist learners with becoming autonomous in the organization of their training course, to encourage them in overcoming difficulties and to recognize personal achievements;
- orientation, to clarify course goals and to help correlate training with their working activities;
- technological support, to explain the platform and its tools (forum, virtual classroom, etc.) to users in clear and simple terms;
- liaison between learners and subject matter experts, to facilitate in-depth

examination of specific topics, clarify doubts regarding course content, or to suggest personalized learning approaches that suit specific users' needs;
- communication, to facilitate exchanges and knowledge-sharing among users.

The choice of using tutors that are not subject matter experts, was made on the understanding that it is crucial for tutors to possess specific, professional expertise in the dynamics of the learning process. Their active collaboration, though, with subject matter experts in their various fields provides valuable insight into the content and nature of each specific training course.

6.1 The e-learning tutor community

Before the pilot course started, the e-learning tutors attended several training classes in order to become familiar with the objectives, procedures and instruments of their activities and the timescales involved.

After this initial training session, tutors were provided (through the LMS) with a virtual communication and cooperation area, the e-learning tutor community, where they had the opportunity to communicate and interact with each other and with the in-house Communications & Training Department, so that they could clarify any doubts and exchange experiences and materials. The tutor community was quite active and lively throughout the whole course, but also during the subsequent period of gathering and analyzing evaluation data: more than 700 messages were posted on the forum.

By way of further tutor support, numerous virtual classroom sessions were organized by the in-house Communications & Training Department in order to monitor progress of the pilot course, analyze nationwide attendance data, and share problem-solving approaches for common problems.

7 Evaluating the pilot project: the learners' point of view

Delivery of the pilot course ended in September 2010. 88% of enrolled users completed the course. Only 7% of learners abandoned the course and 5% took no part in it. Participation in synchronous events such as virtual classroom sessions was extremely satisfactory, with an attendance rate of about 90%.

In order to gather information which would be useful in fine-tuning the didactic strategy, evaluating user satisfaction and identifying the strengths and weaknesses of the pilot project, a series of semi-structured interviews with users was conducted.

The sample of users interviewed consisted of 35 individuals, selected as

representative of the whole group of enrolled users. The task of conducting the interviews was assigned to the e-learning tutors and interviews took place by telephone or in person, lasting about 15-20 minutes each.

The survey confirmed the existence of notable differences amongst users with regard to their basic training, experience and years of service within the Revenue Agency. It also emerged that there were differences in relation to the utilization of users' in activities connected with the automatic checking of tax returns.

Despite this, the perceived relevance of course contents to training needs was consistently high: the contents were stated to be "of immediate use in work situations" by a majority of those interviewed (given that they dealt with real, practical problems), and were easy to understand.

Positive opinions also emerged on the chosen methods of presentation, particularly:

- the possibility to use the course in two different ways (multimedia and text), which allowed users to personalize their course according to their individual needs;
- the graphics adopted, which were described as pleasant and stimulated learning.

Users also expressed positive opinions on the possibility to communicate with other course-users in the discussion forum, and on the constant support offered by tutors.

The main criticisms arising from the survey related to logistical and organizational aspects, which are closely related. In particular, users employed in front-office activities emphasized the difficulty of conciliating their training with their jobs. In order to combat these difficulties, back-office work spaces for the training of front-office personnel will be created and tested, beginning in 2011.

Conclusions and next steps

At the end of the pilot experience, an overall positive evaluation can be made regarding the opportunities for professional growth offered to the Italian Revenue Agency employees involved in the pilot-project.

Both e-learning tutors and subject matter experts are currently taking part in the development of the e-learning initiatives which the Italian Revenue Agency plans to launch in 2011.

The delivery of the course "Automatic Inspection of the Tax Returns" both in e-learning and blended learning modes, when compared with traditional classroom teaching, has led to a significant reduction in costs and has reached

a much larger number of learners. This is a particularly significant result for an organization such as the Italian Revenue Agency, which has over 30,000 employees.

The quantitative results of the pilot project, the evaluation and opinions of everyone involved, and the ideas which emerged from interviews with participants have helped towards a redesign of the course for its renewed implementation scheduled for 2011 and towards the consolidation of guidelines for future e-learning projects to be implemented by the Italian Revenue Agency.

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