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Trainning of trainers in the profil of technical consultant of sustainability

Methodology and Training Innovative Tools Guide

INTRODUCTION

Every training action pursues the transfer of certain content but not all reach the same degree of effectiveness in achieving them. What are the causes? Each type of action requires the implementation of a different training method and, at the same time, for every student profile, will be more effective a learning method or another.

With the introduction of new technologies all kinds of learning systems have emerged, that even though they are having a lot of publicity because of its convenience, not always achieve their ultimate goal, which is learning.

It is essential to innovate in the field of training for it to be effective. But that innovation should not only be materialized in new training systems, but also on how are offered to students so they have an degree of acceptance and optimal efficiency

Nowadays online education is the support to many of the other media and services from other educational channels. Nevertheless, it has still some problems that are not easy to solve.

Although we start with the advantage that today's society is accustomed to using computers, it is detected a certain resistance to its use for training. It makes sense because we come from a culture based on attending a classroom course in a class in which the student is a totally passive subject which is limited to take notes, and it costs to move from one situation to another. Like any change, it takes time. There will always be detractors and other students very enthusiastic. The important thing is that the enthusiasts must   transmit this positive feeling to people who have more reserves and, for this, you can use many instruments of transfer.

The e-learning is a learning process that requires a change in habits and customs in certain cases.

In the implementation of these methods, barriers such as rejection of the use of certain technologies appear. Also important is the lack of time that students usually manifest or lack of self-discipline required in certain channels such as online training. This training is still too much associated with self-study, which, according to studies is the hardest of all methods which are available to the students. This situation is aggravated by the lack of maturity of certain channels, for example, poor educational quality of some online content, with consequent rejection of the users.

There are many other barriers resulting from resistance to change inherent in human beings.

Therefore, the challenge of new methodologies for training, consists not in seeking new systems, since the offer of them is already very wide, but on making an effective system of transmission to students of vocational training.

1. CURRENT TRAINING SYSTEMS

There have been studies about learning which states that people remember:

-The 90% of the things they do.

-The 70% of what they say or write.

-The 50% of what they hear and see.

-The 30% of what they see.

-The 10% of what they read.

Under this study it has established that the correct design of a training methodology must involve a scalar system based on this information. From it we can use three different methodologies.

1.1 METHODOLOGY I: DESCENDING

This method suggests outlining activities and games from the beginning, to force students to do things that will allow them to retain maximum information. It ends in a small reading summary of most important concepts, since it has been found that large readings complicate learning. The system would be:

1st--SIMULATIONS AND GAMES (90% retention): Perform simulations and games on the subject to be treated, forcing the student to participate and "do", and where the content be treated with extension. This will provide a comprehensive view of all that is to be learned, and establish the basis of "memory" for learning.

It has to be the most extensive and durable part, but also the most fun, not to allow make it heavy and the student desist, so it is advised to use simulations and games.

2nd-PARTICIPATORY-FORUMS (70%): They should be based on what was learned in the first step, can be a simple get-together after the game, or an online forum where people write and discuss everything that happened in the actions. Fostering this participation students are invited to talk, discuss and write about what they learned in the first step, reinforcing the learning.

3rd- LESSONS OF THE COURSE (50%): Once the appropriate time for participation and opinion passed, some lessons well planned that nuance the important points, and show the point of view and knowledge of a qualified teacher, will help to clarify the doubts and strengthen learning as the teacher wants to be learned by students.

4th-VISUAL INFORMATION (30%): While or after classes, visual information can help us remember what we have learned.

5th-SCHEME, SUMMARY OF CONTENTS (10%): Finally, a brief outline will allow the student to have a quick reference structure that will make them remember what you learned in this system.

PROS AND CONS: This system has a high degree of involvement from the first moment of the students. Since it starts with session games and simulators that are fun and absorbing. And it continues with work in groups to give group dynamic classes.

However, if the contents are complex or students have little knowledge, to start with simulations or games that students can make do not know how to fulfill ourselves and foster the discouragement and they will stop training.

CONCLUSION: This type of method is recommended for students with knowledge in the field who want to learn more or to specialize, or courses that do not require high technical skills start.

1.2 METHODOLOGY II: ASCENDING

1st- SCHEME, SUMMARY OF CONTENTS (10%): A short guide about what will be the subject or course will help the student to be put in a situation without being overwhelm with a too large reading from which practically will not remember anything.

2nd- VISUAL INFORMATION (30%): Photos or diagrams that accompany the first part, will relax the effort of reading and can help to retain some extra concepts after the first reading.

3rd- CLASS OF CONTENTS (50%): Once put in situation , visual and audibleclasses help to develop the issues, unlike the descendent system, these classes should not point out important concepts, but to extend the base acquired in step 1 and 2.

4th- PARTICIPATIVE FORUMS (70%): Discussing the classes help to retain the contents given in them. The teacher himself must seek to involve students in this additional step.

5th- GAMES AND SIMULATIONS (90%): As an end to this method, the system of games and simulators will invite put into practice everything learned in the course. And will prepare students for appropriate evaluations.

PROS AND CONS: This climbing participation system is designed for student participation to result progressive, which will have little amount of activity at the beginning and go rising as the course progresses. Facilitates learning of complex materials.

However, this system is susceptible to bore participants. Especially if it starts with a very low level of difficulty, or the progress is very slow. It could invite students to skip classes or drop the class directly.

CONCLUSION: This system is recommended for courses that for its difficulty, requires settling knowledge gradually and may progress without overwhelming students. But it can be tedious for people who wish to learn faster with expertise on the subject.

1.3 METHODOLOGY III: PYRAMIDAL

1st- SCHEME, SUMMARY AGENDA (10%): We will use the same guidelines as in the ascending system to introduce students, but may be shorter because we will end up giving a sketch / final summary.

2nd- VISUAL INFORMATION (30%): Photos or diagrams accompanying the first part very briefly, to encourage students to stay involved.

3rd- CLASS OF CONTENTS (50%): Preliminary Lessons of initiation that explains the student's desired minimum contents presented in the summary.

4th- PARTICIPATORY FORUMS (70%): Discuss the classes will help retain the contents given in them. The teacher himself must seek to involve students in this extra step and should be part of them, asking for opinions to the approach of the rest of the course.

5th- GAMES AND SIMULATIONS (90%): As the central point of this method, the system will invite students to put into practice everything learned in the course trough games and simulators and opens the doors towards other content. Students should have the appropriate skills to develop the games at this level, but these ones should at the same time leave gaps and curiosity to invite students to continue learning.

6th- FORUMS PARTICIPATORY (70%): In this step, they will participate and discuss experiences after making the game, in a way that it will re-engage students and invite them to complete the course, because in the next part will discover those things they have discovered in simulators and has not learned yet.

7th- ADVANCED CLASSES (50%): You will use these classes to learn advanced topics already discovered in Section 5.

8th- VISUAL INFORMATION (30%) to help them to remember what they have learned until now.

9th- FINAL SUMMARY SCHEME (10%) Outline or extended summary to complete the course and serve as a quick reference to the student to remember what they have learned.

PROS AND CONS: The pyramidal system is getting the best of the two previous systems minimizing the cons:

A brief introduction to basic level to quickly get to the games and simulators, which will help those who do not know enough to establish the basis for the correct learning course.

And more specialized and complex training once passed half the contents of the training .

The negative part is that this type of training tends to require more time and hours that the two preceding systems, and may not work for all types of courses.

CONCLUSION: This type of method is recommended for extensive skills seeking to introduce many new knowledge to students. Furthermore, introducing the most participative part in the middle of the course makes it easier for students to endure the full duration of the course.

1.4 ON EVALUATIONS

In the above methods there are not established when or how the evaluations be because they depend heavily on the specific course. But many studies recommend continuous simple self-assessments that allow students to to know how far they take the knowledge. And the tests that the teacher considers appropriate.

Self-evaluations can be performed at any time, and it is advisable to provide students the ability to do as they think to be appropriate.

2. NEW TECHNOLOGIES FOR TRAINING METHODS

Depending on the different educational systems and their level of recall, technologies can be implemented differently.

Note that the above methodologies can be applied both for classroom training, as well as for online training. We will study both cases separately:

Implementation requires a different training method and, at the same time, for each student profile, a learning method or another will be more effective

With the introduction of new technologies all kinds of learning systems have emerged, that while they are having widely publicized because of its convenience, do not always achieve their ultimate goal, which is learning.

2.1 PRESENTIAL TRAINING:

The more traditional of the two. It should more correctly applied the use of information technology to ensure the care and student participation.

1-SCHEMES AND ABSTRACTS IN THE PRESENTIAL TRAINING: Usually delivered in photocopies or books or written on the board or slides for the students to copy. New technologies should allow portability of such summaries, and the right thing should be to facilitate such schemes both in physical and digital format.

The digital format must have the highest compatibility to allow playback on computers, smartphones and tablets, giving greater mobility and ease of use to the student.

2-VISUAL INFORMATION: As well as in the outlines and summaries, display photos and images in books and in class is not enough. A USB flash drive with images in jpg, some slides in PowerPoint or more compatibility format and an internet address where you can make inquiries and access to visual information had to be a mandatory practice for the teacher.

3-CLASSES: They can be either live teacher talks or audiovisual conferences of the contents. In the latter case is again advisable to provide student with these ones formats that are compatible to enable playback on any device that can take the student. And in the first, the implementation of audiovisual recording systems to provide students with copies of the classes is one of the great unfinished businesses of training.

4-PARTICIPATIVEFORUMS: Common and part of the gatherings in class, online forums should be implemented, moderated by the teacher, where students can participate at any time from

home or wherever they are. And the teacher can also be involved in the activities resulting in the forum along the course. Has shown that a Good Moderate forum is one of the most cohesive tools and involve a more effective group of students, and greatly increases learning from those groups.

5-GAMES AND SIMULATIONS: Such games and simulations have to be the evolution of business practices. The company practices are known as having a very low degree of effectiveness. Because in many occasions during the internship period the students never meet with situations that may require applying knowledge beyond the basics.

As simulations have long been implemented in training that requires a lot of responsibility and endanger lives (eg, airline pilots and train), they are the great unknown in other training areas, despite having a high degree of effectiveness in learning.

In the presential training ,games and simulators can be developed in the classroom, but it is recommended to have an online platform enabled for it.

CONCLUSIONS: The development and modernization of the presential training means reinforcing the online presence of the course . A good class work plus the possibility of continue working at home or during leisure time, if a teacher shows participative and willing to moderate, enables training to have a much higher level of success.

2.2 ONLINE TRAINING:

The newest. Despite having already many platforms and online courses, does not come to good learning outcomes, and the degree of abandonment of students is very high. It can be markedly improved with a correct structure with a high-level teaching.

Another problem facing the online training is the resistance of students to new methods, and the "loneliness" of which many users complain. A good promotion campaign of platforms, lectures or tutorials and manuals of training in the use of online training system helps the first step. And the right care via phone, chat and forums help students to have a sense of "group class".

The systems recommended for online training are:

1-SCHEMES AND ABSTRACTS: Ready for print, digital media portability and visible from online, must be traceable by the student immediately just entering the training platform. A good scheme or summary greatly increases the degree of enrollment / course completion.

The digital format must have the highest compatibility to allow playback on computers, smartphones and tablets, giving greater mobility and usability to the student. It should include guidance on how to make the portability for those students who do not know how to do.

2-VISUAL: online slideshow, photo galleries or images, available to view on the internet so as to download.

3-CLASSES: Although online training, books and documents readings are required, and must be in compatible formats that you can download and watch online. It has been shown that many students fail to read. However, video conferencing systems of specialist teachers, and online video classes are really effective. It is recommended to minimize visual readings and raise all that is possible in online training.

4-PARTICIPATIVEFORUMS: online forums have been in use for many years on the Internet. And yet are still not used properly in training. It is the primary tool for online student engagement and the key to the group feeling that many students complain. The responsibility of the "life" of the forum is largely on the teacher and course managers. Proposing activities, references to the forum, and answering doubts students raise as to create an online community that greatly enrich the course training.

5-GAMES AND SIMULATIONS: The computer and the Internet give cause for all sorts of games and simulators. And it is the great field to explode in online training. Their main problem is that they are expensive to make, but nevertheless, they are certainly the best learning tool that new technologies can bring today.

CONCLUSIONS: Although training platforms have years running, they still have a lack in the implementation and the success that they were expected. Most of their problems are the difficulty of access for people who do not know much about computers, and poor quality teaching of the courses offered.

3. TRAINING INNOVATIVE TOOLS GUIDE

Although some of the tools we propose have been in use for some time in training, is how to use them, and their new capabilities, thanks to upgrades, which make these tools innovative ones.

It should be noted that most of the time the innovation part of who transmits the information and not the tool itself. It is the use we make of it that transforms the way we teach using ideas and means to stimulate interest and knowledge.

It is also true that we rarely achieve to exploit the potential of the tools at our disposal , either because it is not necessary , either for lack of knowledge or interest , we must use the full potential offered but we need to achieve our goals . Sometimes, trying to exploit the potential we focus on the tool, and not the purpose of it, which is the topic we are trying to convey.

We must therefore involve the trainer to find the balance between what we want to convey and the medium we use for it.

Listed below are a number of tools that can be useful to convey information in an innovative and effective way:

-POWER POINTS AND SLIDES: Until recently these files were used as summary or outline to see on the computer screen and put in projectors. But today there are many devices that can play such files. Should be made compatible and provide students transmission to their personal devices, so they can use them whenever they want. Today the main program is Microsoft Power Point slides, although we have free alternatives as Impress.

- PHOTO GALLERY: As with the previous case, portability is the best tool today for these files. Both tablet and computers have integrated software to take their view slides, web, html 5 technologies and JavaScript allow making great quality galleries.

- AUDIO VISUAL-MEDIA: The main tool to view audiovisual content nowadays is Internet. Channels like YouTube, Vimeo or private ones are a basic tool for students to quickly access the learning content they want. While it should facilitate the download in order to access the contents where there is no internet connection. To properly develop video you must made it in FullHD definition or even 4k if you want to use recent technologies with future projection. Using motion graphics techniques can enrich audiovisual contents.

- BOOKS, DOCUMENTS AND INTERACTIVE READING : Always available for downloading and printing , new technologies allow us to perform them handicapped accessible , even for the blind. To do this, you must always develop an HTML version of the agenda. Furthermore, using the new technologies, both the HTML documentation as PDFs and other formats can be interactive and thus provide video and audio files to complement reading. An interactive document greatly increases the success of an online course. Adobe InDesign and Creative Cloud allow PDFs and other documents with great interactivity and usability. Web technologies HTML5 CSS3 and Javascript allow transfer of these documents to the internet with all the guarantees of usability.

- CONFERENCES: New technologies are allowing live videoconferences via streaming, in an easy way and with little or no cost. There is software like Skype conferences allowing 5 devices, where one of them can be a teacher and other 4 classrooms. And Google, with its new tool Hangouts allows more extensive conferences for free through its social network.

- FORUMS AND NETWORKS: The forums are desperately needed, because they are not exploited as much as possible. Complement forum activity typical of courses with social networks and generate more traffic and interest in the contents given in it. PHP -Nuke is one of the best technologies for participatory forums, but Moodle, online training platform for excellence is integrated forums in it. Social networks like Facebook and Google Plus can also be helpful for course dissemination.

EDUCATIONAL GAMES AND COMPUTER SIMULATION: Today's ability to create games for both web content to download to them to the courses , the possibilities are almost limitless and are great training tool online . Appropriate technology for developing games is JavaScript, but there are new engines as Unity 3d to facilitate their development.

- AUGMENTED REALITY: New technology that combines 3D and real images that has a great impact and, as computer games and simulations, it is very useful for teaching purposes. Vuforia , Ar -player, Unity -AR , there are multiples emerging augmented reality technologies , which one to choose depends on the nature of the application , the most important is that it is portable to all devices.

- MOBILE APPLICATIONS (APPs): Mobile applications for teaching purposes are also an innovative training tool . As augmented reality and games could be expensive to develop. Each mobile system has its own programming language , although there are " frameworks" as Phonegap that let you develop for multiple platforms at once .

- SYSTEMS OF OBJECTIVES AND ACHIEVEMENTS: Although not often explored in training, is having great boom in online activities. Consists on creating a social profile within the training platform , where, for making certain activities you receive 'honorable mentions' or achievements that allow you to be a user of the network highlighted . A typical example may be a ranking which appears who has correctly answered 60 random questions from a test of the theme in the shortest time. This system of motivation can help students to study more or work harder the course. Another example that is often used in forums is to give " certificates " to the persons that have more activity in it. This type of systems and applications are made with web technologies html css and JavaScript .

- SYSTEMS OF EVALUATION: online training platforms allow multiple evaluation systems, the most typical is multiple -choice of random questions that allow students to examine as many times as desired, to perform self-assessments. And more complex test systems that serve as final evaluations. Although in high-stakes exam is recommended attendance system to avoid "cheating" by the students. The basic training platform is MOODLE, which has all the usability technologies applied to training, but with PHP you can do custom and personally designed platforms.