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INNOVATIVE TEACHING METHODS BASED ON INFORMATION TECHNOLOGY

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Abstract
E-learning has earned a solid reputation among the business community as the method of choice for delivering wide–impact, high–quality, cost–effective training. Although the means used to attain these goals may vary as far as the pedagogical approach and technical complexity is concerned, the results must be the same: added–value for the employees and companies alike.
The present paper analyzes some of the content design exigencies imposed by the specifics of company staff training. At the same time, it proposes a set of guidelines which could help designers get adequate pedagogical benefits from blending multimedia and e-learning standards.

Keywords: e-learning, blending learning, multimedia content

1. Introduction

When we intend to analyze the advantages presented by educational software compared to traditional teaching and learning methods, we should start from the final beneficiaries - students and teachers, who are the key actors in developing and using educational software. The IT specialist's role is secondary. He knows which information technology tools should use, and which opportunities are available in the technical plan. But those tools are harnessed through the teacher to the benefit of the learner. Educational software that does not seek this guidance cannot achieve its mission and will remain a simple application, an exciting game and nothing more.

If we look at things from this perspective, we have a better representation of requirements to which educational software must respond. First, it is the purpose for which it should be circumscribed. Educational software should facilitate learning, provide a new framework, better than the classic one, of how the student should approach information, to engage, to help him learn and not just memorize.

At the same time educational software should propose new ways of organizing information. Thus, the information must be easily accessible

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and the tools offered by the product to its beneficiaries should be easily exploited.

For teachers, educational software should provide a new didactic instrument that they can successfully use in training. But what educational software successfully adds to the game is flexibility.

A product of this type opens new opportunities for teachers. Unlike previous teaching tools, the teacher is no longer limited to some pre-established form (for example, a drawing board remains a board and is limited to the information it contains). In the case of educational software, starting with the initial form, the teacher can transform or replace the product with their own material. The modularized structure enables him to use just moments or tests they deem necessary for a particular lesson or a specific class.

2. Case study

We have already mentioned that one of the most important assets of educational software is that it promotes learning at the expense of memorizing. One of the concepts underlying this approach is discovery learning.

For this, educational software brings a whole series of instruments from the ludic sphere. But one thing must be stated at the very beginning. Despite the elements related to game, we are dealing with a dedicated educational product, which falls within specific educational goals. Given this, the playful side must not impede the formative, but rather merely to complete the latter.

The result can only be beneficial to the end user. Thus, information may be presented in an appealing and interactive form to determine the student to be involved in running the course, to become, sometime unwillingly, part of the process. Perhaps easier than in the case of technical works, the lesson becomes interesting and goes beyond a mandatory step that must be just checked.

Learning by doing determines this outcome. The information is revealed as part of a complete application, whether it is an educational game or a three-dimensional animation. The student goes from stage to stage and reveals new data with each of them. The first thing to emphasize is that this approach offers the advantage of presenting information in context. Concepts of Technology, for example, are seen as part of a process. Moreover, the animations show processes in a manner that goes far beyond a picture or a drawing board. First, the student is related to data and

experiences that are already known, so that subsequently he can understand and deepen new information that is referred to him.

The second aspect that should be the highlighted is the fact that the focus this time is on the student. We constantly refer to him and try to identify ways we can make learning easier. This is one of the goals we set, without affecting the value or volume of information to "coddle" the end user. The challenge for the teacher and developer of educational software is to able to identify precisely the tools and methods to make information more accessible and easier so the student can reach the optimal preparation level more easily.

From the perspective trainer, the cognitive edifice which we intend to implement for the student must rely on a solid foundation. This foundation is represented by the baggage of knowledge that the student already owns, assimilated knowledge that will help him learn (to understand and explain) new concepts much easier. If it were to relate to Bloom's taxonomy, this would be the first step in the process of learning, the knowledge stage.

The student is presented with a series of items related to the lesson's scope, enabling him to refer to a much better educational content that will convey. His past knowledge and experiences helps him enter into the 'atmosphere' course. Without being obliged to do or expressly request, the student should pass through the data. Figure 1 hierarchical depicts a structure of modularized items of information. Each stage of the learning process corresponds to a level.

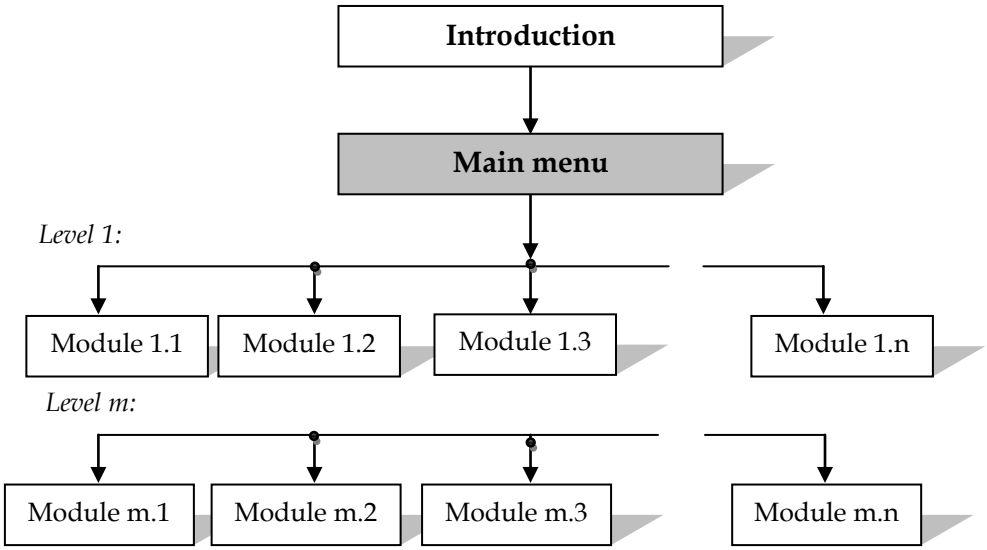

Figure. 1: The hierarchical structure of information modules

This moment might be called the generic teaser, but its functions go far beyond the limits that apparently draw its name. It depends on the teacher's skill and creativity and on the software developing team to come out of the scope of a cute drawing attention application and transform it into a true teaching tool.

Here, the technologies used in developing educational software open a wide range of opportunities. But one thing must be remembered: graphics, 2D or 3D animations are only teaching tools, and do not constitute a target in our approach. An application that helps the student to recall previously learned information, relevant to the beginning of the course is welcomed. However, to generate more interesting and attractive content, we add graphic elements to which we referred earlier. Nevertheless, the formative value of the software module is not given in any case by the avant-garde design, nor by the originality of the application in question, but the cognitive benefit it brings. Other aspects like ergonomics and décor are important for an education application, but must fall within the educational goals.

The next stage is understanding. Here the teacher's didactic skills and those related to IT blend happily. It is the section in which new information is presented to students and it should enable smooth understanding and mastering it.

The role of the software developer is also secondary, at this level. The final quality of the product depends utmost on the quality of the teaching material on which it is based. And when we talk about quality, at least two aspects should be considered, namely: scientific value and structure. These two are closely interdependent, and the absence of either of them can compromise the overall value of the material.

We will not insist on the scientific value because its importance is evident when discussing about a material used in the training of future generations of practitioners. But an aspect often overlooked is the structure.

The importance of the structure must be considered in at least two respects. Firstly, it is about how the information is divided in order to be presented. We mean here both logical structure and especially the way the modules of information are designed. We will insist particularly on this last aspect.

The requirements imposed by achieving a valuable educational software are completely different than those arising from the development of a course in classical sense. The software application shall be subject to clear limitations of size and time requiring a different approach to traditional educational materials.

Information should be structured in based on relevance, in order to avoid the to risk to create an interesting software application, that does

nothing but to waste between details without emphasizing the overall message that must be conveyed. The primary focus, in terms of information, should be the data, that according to the operational objectives of the application, the student should acquire. Therefore, the course materials on which the entire application is built should focus primarily on data transmission in a manner that facilitates its understanding and subsequent application.

Concerning the structure, maybe we should bring into question a note of pragmatism that should be taken into account in the design and development of educational software. From the point of view of the one that provides the information material, he must take into account the specifics of the course and especially the specificity of its target audience, its expectations, needs and level of preparation thereof. Without these considerations, the final application will only continue on the line for most of the current educational materials, without that added educational value that we want and we propose.

Also, we must also take into account the limitations of educational software involved that are already mentioned above (size and time). In relation to a web-based product, they are even more striking. Therefore, the pragmatism that we have referred to, should guide both the supplier of educational materials and the teacher involved in the development of educational software, within the limits posed by the product, to achieve by best fashion possible the educational objectives of the application.

In support of the learner, the ultimate beneficiary of the product, who should reap the benefits projected by the drafting team, there come the text organizing facilities, offered by IT. The most eloquent example in this respect is probably the hypertext. It can liaise between the different sections of the same educational material, offer links to databases or alternative educational materials. In this way, an entire structure of data is arranged and information becomes more accessible to the user, facilitating learning.

At the same time, the theory must always be accompanied by practical applications, the only able to present the concepts in context. In this way it stimulates the learning of knowledge, to the detriment of mere memorizing them. Meanwhile, the immediate proof of their usefulness strengthens the practical side of the training process for the benefit of learners and teachers.

Concerning learning, the application stage cannot be overlooked in an educational software. Here, IT technologies round the teaching methods very well. They bring in the possibility of creating complex applications that simulate real processes and interactions, presenting technical data or expert information in context. In this way it gives the student the opportunity to view various processes and components that normally

would be hard-to-reach. A virtual environment allows the most diverse experiments and not only provides interactions and the appropriate results, but also an adequate representation.

3. Conclusion

The suggested approach regarding content is designed to fully exploit the features offered by the proposed technical solution. At the same time, it emphasizes interactivity, accessibility, functionality and the innovative. It is an approach chosen to serve in a suitable manner to the project objectives and to allow its implementation in the best conditions.

The approach to the content to which the whole paper refers, not only facilitates access to information, but also encloses the related IT tools to the common user. At the same time, it is sought to ensure project sustainability and viability. The result is a product that not only proves its utility, but also can guide the Romanian education to a new, more powerful track.

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