

Uses of Interactive Television on Educational Settings: Evaluating the Media Impact

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Abstract

VEMiTV project involves the establishing of t-learning potential on a specific educational setting: elementary schools. This document describes the working hypothesis and the usability and cognitive procedures being followed in that project, while at the same time discusses t-learning potential as a formal or informal learning strategy.

Keywords

t-learning, cognitive evaluation, iTV applications

Introduction

The "Validation and development of an Interactive Television Based Educational Model - VEMiTV" (POCTI/Com 43208/ 2001) project aims at establishing a model for the testing and measurement of specific interactive television applications when used on an educational setting. This project has as an ultimate goal to establish the potential of interactive television as an educational tool.

The project started being developed in Portugal in July 2002 and its being conducted by an interdisciplinary group composed of researchers from Universidade Lusófona and Tv Cabo. Final results for this research are expected by January 2004.

This document presents the structure of the experimental procedure being used on the project and discusses the possible roles of iTV on educational settings.

T-learning in the context of the project

Establishing the potential of t-Learning [Bates 2002] constitutes a major area of iTV's development. The expression "t-learning" describes the convergence between iTV and e-

learning, understood the second has the use of Computational technology to support training and educational activities [diSessa, 2000].

A number of factors point to the fact that television can be used with advantages on an educational setting: television is a largely available medium; most individuals are very accustomed to it; people usually trust what they receive through the television set and the quality of the content assures a richer experience for the user.

Television can perfectly cope with generating very rich contents and high levels of motivation for the user, essential elements for any training experience [Lytras, et al, 2002]. But, on the other side, traditional linear television broadcast does not provide any feedback nor does it allow the user to interact with the contents [Traudt, 2000].

iTV applications give the user the possibility to interact with the content being broadcasted. Either that interaction only deals, as in the case of enhancements, with the "see more" possibility, or it provides personalization tools, the fact remains that the possibility exists for organizations to use iTV as a learning tool.

When choosing the platform for any type of training activity, the first consideration we all make is “will this tool serve my educational purposes?” Deciding on using one or other technology depends on the environment where the activity is taking place [Constantini, 2001] and on the characteristics of trainers, trainees and educational contents. In order for any technology to completely fulfil its purposes, we must know in advance what that particular technology possibilities are and what we can expect from its use.

The main working hypothesis of our project is that “The use of iTV on an educational setting can improve students levels of motivation and cognitive retention”. This hypothesis tries to lay the ground for a research program that can help us in clearly establishing the potential for the use of t-learning.

The project promotes the use of iTV as a synchronous and asynchronous tool for ODL activities [Wolz, 1997]. In the context of the project, the expression “T-learning” refers to the intersection (Fig.1) of the uses of television with the uses of the computer to produce an e-learning experience [Maly, 1997].

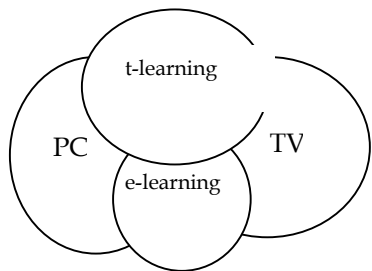


Fig 1 - T-learning position

Experimental procedure

Under the VEMiTV project there are two main areas of scrutiny - interface usability and users cognitive responses. Tests on both items will be conducted on several stages of the experiment and all items have as a basis the same sample of individuals, the same iTV applications and the same educational environment - first grade schools. The hypothesis will be tested and validated for two different uses of t-learning applications - it's use as the main formal medium for learning and it's use as an informal medium complementary to the children regular classes.

Usability deals with the forms through which users interact with interfaces in order to

accomplish certain tasks [Shneiderman, 1998]. In VEMiTV, Usability evaluation is divided into two steps. When the first prototype for the interface and application is done - current moment in time - a heuristic evaluation of the interface is conducted according with Nielsen's set of recommendations [Nielsen, 1994]. This evaluation will comprehend design, layout and functionality elements of the application and the objective is to simplify the interface to the minimum requirements of the sample test groups while at the same time keeping its ability to convey the involved educational contents [Chiu, 2001]. A second evaluation on the interface's usability will be conducted during live tests through the use of an adapted version of *QUIS* questionnaires [Chin, 1988]. The main objective of this evaluation is to establish a level of satisfaction with the interface and define a set of rules for the personalization of the tool. Besides questionnaires, three other methods for usability and cognitive evaluation will also be used at this stage [Dumas & Redish, 1999]: definition of a focus group based on a students and teachers sample, logging of actual use and live observation during application use.

Usability inspections will be conducted simultaneously and following the same experimental procedure as cognitive evaluation. A group of 55 children aged between 9 and 10 taking first degree in elementary school will be divided into three groups - a test group formal (O1), a test group informal (O2) and a control group (O3). The experiment will run for 4 weeks (June 2003) and it will comprehend math's and history contents. For that period the O1 group will only use the iTV application as its learning tool, the O2 group will use a smaller part of the tool, mostly based on enhancements, as a complementary medium to traditional classes, and group O3 will have no access to iTV. Previous test to evaluate current state of achievement for each children and each class have already started being deployed using the BAPAE methodology [Cecog, 1996]. This proof covers the following areas: 1) verbal; 2) spatio-perceptual; 3) Numeric; 4) Shapes; 5) spatial orientation. The same tests will be passed to all children immediately after having used iTV and one month afterwards.

The iTV application being developed for the experiment is based on the Microsoft TV application and uses the Metallic3036N STB. The option for this solution derived from the fact that this platform is the only currently available in

Portugal. All the application coding was done on a javascript and java servlets (jsp) environment and tested using Microsoft simulator. Future migration of the application to an mhp platform is foreseen.

Contents will be disseminated based on two 21 min. linear shows containing an extra approx. 2h enhancement. A 6 min version for the shows has already been produced. The shows are totally based on animation, both for economic reasons and pedagogical reasons - animation contents are closer to children educational imaginary and emotional learning behavior [Reilly, Kort, Picard, 2001].

Conclusions

In order to establish the potential for t-learning as a valid educational strategy, testing of cognitive impact on user's must be conducted on different educational settings through the use of various learning materials. These tests validity will be very reduced if no usability evaluation of the used application is done. Only these tests will correlate the use of iTV with contents retention and cognitive impact. VEMiTV aims at establishing a methodology for this experimental procedure.

If formal use of t-learning is validated (HipO1), an original educational method must be developed on a further stage, if only informal use of t-learning is validated (hipO2), then our procedure admits, not the transformation of the content's structure, but the deeper personalization of the application [Chorianopoulos & Spinellis, 2002] to accustom not only a synchronous use of iTV, but also an asynchronous, informal use.

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