

Development and Assessment of a Telematic-Based Training System on Statistics

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1. Introduction

Research into statistical education has been highly influenced by the use of information and communication technologies in the last years. The purpose of this article is to describe our research and development work concerning training on statistical methods using telematics. The results of this research have been embedded in the TRAPSP project (Advanced Multimedia and Distance Training for SME teams using the Personal Software Process), that was sponsored by the ESPRIT initiative of the European Commission.

The main objectives of TRAPSP project were to investigate the peculiarities of SME engineers and technicians training needs, evaluate the potential effectiveness of information technologies to provide interactive courses to a remote audience and propose a working methodology. This methodology presented for the SME specialist work requires the knowledge and application of statistical techniques, therefore a telematic-based training system on statistics has been developed and assessed.

2. Requirements and Proposed Solutions

The identified target audience of this system share the impossibility to attend regular pre-programmed courses due mainly to their lack of time for training and formative purposes caused by their daily activities. Therefore, one of the main identified requirements directly addressed by TRAPSP, is that of providing flexibility (not constrained to fixed dates) and accessibility (on-site and self teaching training) to increase their knowledge and skills in software development.

The main actors in the training scenario are the student and the instructor that is available by telematic means (e-mail, videoconference,...). The instructor is the responsible for the enrolling and monitoring the student in the course. The content of the course is stored in two different sites: the local CD-ROM and the Course Web site, which are produced and updated by the course developers. Finally, the student will be able to participate in a discussion group in order to exchange ideas and comment different aspect of the course.

3. System Learning Objectives

The main learning objectives of the course are defined as follows:

- Understand the various statistical techniques the proposed methodology uses for estimation and data analysis.
- Provide the student with detailed information about the statistical techniques used in the exercises applying the proposed methodology.
- Allow the student to analyse their data using selected statistical analyses.

4. Content Selection Criteria

The proposed methodology uses several different statistical and mathematical methods. The criteria used to select the content of the course are the following:

- Statistics is a large field and the course deals *only* with those methods that are relevant to the application of the proposed methodology.
- The explanations for the methods are restricted to their usage as it relates to the methodology. Several of these methods have many other uses.
- The instruction for these methods focuses on *how* the methods work and not *why* they work.
- It is emphasised *why* the value of the analyses produced from using the methods described will depend heavily on the quality of the data collected so data gathering practices must be performed carefully.

5. Conclusions

A formal evaluation process of the system has been carried out by TRAPSP project partners and the companies where the system has already been applied. The overall evaluation of the system by the majority of the evaluators was positive as the analysis of the evaluation data suggests. This evaluation result indicates the appropriateness and usefulness of the course and the feasibility of the adopted approach to provide telematic-based multimedia distance training. Concerning course content, all the evaluators considered the statistical knowledge was extensive and included many different fields. The support provided by the system was estimated suitable and sufficient.

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RÉSUMÉ

L'objectif de cet article c'est de décrire le travail de recherche développé dans le domaine de l'utilisation des moyens télématiques pour la formation sur les méthodes statistiques. Le travail a été développé dans le cadre du projet TRAPSP, financé par l'initiative ESPRIT de la Communauté Européenne.

Les principaux objectifs du projet furent la recherche des besoins de formation des ingénieurs et techniques des petites et moyennes entreprises, l'évaluation du caractère des technologies de l'information pour créer des cours interactifs, et proposer une méthodologie de travail. L'application de cette technologie a besoin de l'emploi des méthodes statistiques, en conséquence on a développé un système télématique pour la formation des usagers finals sur les techniques statistiques.