Teaching teachers to teach statistics

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In the framework of teachers' training in primary education, the Greek Universities took the responsibility of organizing and operating special courses. The Aristotle University had the responsibility of the operation of such study programs for 12000 teachers who work in a distance up to 120 km from its area (the city of Thessaloniki).

In the fist phase of application of the program 3000 teachers were selected who, according to different criteria attend 1,2 or 4 study terms in groups of 30 – 50 persons. At the same time the Aristotle University commenced and fulfilled a similar one-term study program for 500 teachers of South – East Cyprus (area of Larnaca and Ammohostos).

Attendance is obligatory for the introductory subject of statistics that includes 18 hours of theory (6 lessons of three hours) and 12 hours in the laboratory (in groups of 10), though, at the same time, they organize a project in a school class during the lessons.

The general structure of the program is:

	I learn Statistics (4 times X 3 hours)
I teach elements of statistics	
	I organize the project (1 time X 3 hours)
I check and analyze the data	
	Use of P/C (EXCEL) (12 hours)
Results	
	Evaluation (3 hours)

The essential element of the subject is the organization and guidance of a project by the teachers in class (with common theme for all school classes) through which children understand the meanings and techniques of introductory statistics included in the Primary School Curriculum.

During the first year of application the monitoring and analysis of *childrens' habits of television viewing* was chosen. Data were collected for a period of one week.

The course is organized around the teaching material (meaning of variable, randomness, frequency, table of frequencies, mean, mode, diagrams, cross-tabulation), the teaching process (project) and the means of teaching (data monitoring sheet, spreadsheet, data entry, computer).

The application phase of the project covers 6 hours of teaching in the school class divided as follows:

1 hour	Description of the project (individual work)	The meaning of the variable The organization of the monitoring
1 hour	Spreadsheet (individual work)	Encoding and checking of data Using EXCEL
2 hours	Analyzing – Tables (Group work)	Table of frequencies, mode, mean Cross Tabulation
2 hours	Analyzing – Diagrams Presentation (group work)	Diagrams, Results Essay - Presentation

Apparently, part of the work must be done at home (during the phase of monitoring data as well as during the other phases).

In this work we present a set of data which was gathered by the organization and application of the project in primary schools of seven districts of Macedonia, *(Thessaloniki, Pieria, Kilkis, Imathia, Pella, Chalkidiki & Serres),* in the framework of the subject *"Statistics in Education"* of the specific study program at the department of Education for teachers of Primary Education.

The data arising from the above project can be evaluated in three levels:

- In the level of analysis the data
- In the level of analysis the understanding of the meanings and techniques of Statistics included in the curriculum by the pupils
- In the level of understanding of the method and teaching approach by the teachers.

These data have arisen by the monitoring and analysis of *habits of television viewing* for pupils of the last four classes of primary school. The project-file for every class includes:

- The primary set of data
- The processed spreadsheets
- Pupils essays and analysis (tables, diagrams & comments)
- Teachers' essay about the planning and application of the project

The sample results from the analysis of data presented in this work are from the area of Naoussa Imathias.

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RÉSUMÉ

L' information considereé comme un produit en possession et un moyen d' excercér une politique, a substitue dans un grande degré les produits materiels, en coduisant vers une nouvêlle form de concentrasion de pouvoir. La Statistique aujourd' hui, peut être décrite comme la science qui s' applique a la collection et d' evaluation de l' information.

Dans cet article, on se met a l' analyse des aspects de l' introduction de la Statistique au systeme educatif, en relation avec les problèmes de comprehension des notion statistiques preliminaires. On presente ici les resultats de l' emploi d' un test aux étudiants des Êcoles Primmaires.

Le programme est formé d' une maniere telle qui nous permettra d' examiner abiliteés comme:

- *Inference en ce qui concerne des parametres d' une population*
- *Le choix de l' exact figure pour presenter des donnees*
- *Lire et comprandre des tableaux statistiques*