

VALIDATION OF ANONYMOUS SURVEYS OF EDUCATIONAL SUBJECTS THROUGH THEIR BASIC RESULTS

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The paper presents the development of an anonymous survey system using the Internet for the purposes of the System for Assessment and Maintenance of the Quality of Education (known as SOPKO) at the Technical University of Sofia. Some of the results processing functions and means for guaranteeing the process' authenticity are described. Some survey results used as parameters, which could be checked externally, are suggested. The first results from the system's implementation are shown.

Keywords: anonymous survey, Internet, validation, quality, education

1. INTRODUCTION

Nowadays more and more attention is drawn to the quality of the process related to the contemporary relations between consumers and product suppliers. It has been regulated in a number of materials [1, 2] and document at different levels [3, 4]. Generally those relations are present in the quality control systems and are connected with consumers' assessment. Survey assessment forms now have a wider application along with the pure formal normative regulations. On these lines the Technical University of Sofia carries out surveys of students' opinion as an element of assessment. The electronic surveys are being implemented since 2007 and use survey card that has been approved by SOPKO.

2. SURVEY PROCEDURE

There are many ways for carrying out surveys and they may have different aims. Surveys are widely used for sociological inquiries, studying client's opinion, etc. [5]. The main objective of the survey carried out in the framework of SOPKO is to get students' assessment of the educational subjects. The questions are divided into five sections with an additional summarising one.

The classical procedure used up to now involved a person who distributes among students printed hardcopies of the survey cards in a hall and gathers them at the end. The results were processed by hand after that. This way of carrying out the procedure is related with the subjective assumption that the survey is not totally anonymous, especially if it contains free text comments.

A decision was taken to use electronic means in order to make the results processing better. One of the approaches is to implement a system where the results are being scanned and recognised, but there is a potential chance of erroneous reading

in cases of defective media, multiple checked choices or markings outside the area.

The second approach is to fill in an electronic form. There are two advantages:

1. The form can be prepared in such a way that multiple choices could not be marked in one question and any corrections without invalidating the form are possible before submitting it.

2. The electronic form allows distant voting, e.g. without the presence of a supervising person. It fits perfectly in the state-of-the-art informational technologies that use the Internet.

The problem related to the anonymity of the survey remains unsolved. One possible solution is to implement a procedure where a person cannot be matched against a submitted survey card. In order to achieve that the electronic form shown in Figure 1 has been generated.

АНКЕТНА КАРТА
ЗА ОЦЕНЯВАНЕ ОТ СТУДЕНТИТЕ НА КАЧЕСТВОТО НА ОБУЧЕНИЕ ПО
УЧЕБНАТА ДИСЦИПЛИНА
"Име на дисциплината"

Уважаеми колеги,

Този въпросник е част от продължителните усилия на ТУ - София да подобри качеството на учебния процес. Той има за цел изследване на студентското мнение по изучаваната учебна дисциплина. Анкетата е анонимна, а получените данни ще бъдат използвани само за нуждите за повишаване качеството на обучение. Обработената информация ще бъде публикувана по решение на факултетните съвети по подходящ начин и Вие ще можете да се запознаете с резултатите, за получаването на които сте помогнали. Ще бъдете информирани и за това, какви реакции са предвидени за Вашите слабости.

Благодарим Ви за участието!

Пол		Средно образование			Завършено образование			
<input type="radio"/> Мъж	<input type="radio"/> Жена	<input type="radio"/> Реално средно	<input type="radio"/> Техническо - електро	<input type="radio"/> Техническо - друго	<input type="radio"/> под 50 000 жители	<input type="radio"/> между 50 000 и 1 000 000 жители	<input type="radio"/> 1 000 000 - 5 000 000 жители	<input type="radio"/> над 5 000 000 жители

№	ВЪПРОСИ	ОТГОВОРИ				
		ДА	ПО-СКОРО ДА	КОЛКОТО ДА, ТОЛКОВА И НЕ	ПО-СКОРО НЕ	НЕ
Посещавал съм % от проведените занятия:						
<input type="radio"/> 80 - 100 %						
<input type="radio"/> 50 - 80 %						
<input type="radio"/> 20 - 50 %						
<input type="radio"/> 0 - 20 %						
I. ЦЕЛИ И СЪДЪРЖАНИЕ НА ОБУЧЕНИЕТО						
1.	До (или в) началото на семестъра, в който се чете дисциплината, бях запознат с целите, съдържанието, информационните източници, какво се иска от студентите, как ще бъдем изпитвани и оценявани и защо ми трябва това обучение по дисциплината.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fig.1. Electronics form of the survey card.

One-time access codes are generated in order to be used for accessing the survey. Their number is equal to the number of students that are supposed to participate in the survey. In this way the second main task of the procedure is achieved – to guarantee the completion of the necessary number of survey cards without any excess, e.g. to eliminate any forged cards.

The anonymity could be guaranteed if it is not possible to match the access codes against the survey cards. This could be achieved by distributing the access code in a

random manner, e.g. each student draws an access code ticket from a face down deck. The survey is time limited and the deadline is indicated in the access code ticket. The address of the web site can be found on the University web site – <http://www.tu-sofia.bg/Bul/sopko/index.html>, which is shown in Fig. 2.



Система за оценяване и поддържане на качеството на обучение (СОПКО)

Fig.2. The portal to the survey site.

The next step is to choose the faculty, specialty and subject from a drop down list – Fig. 3.

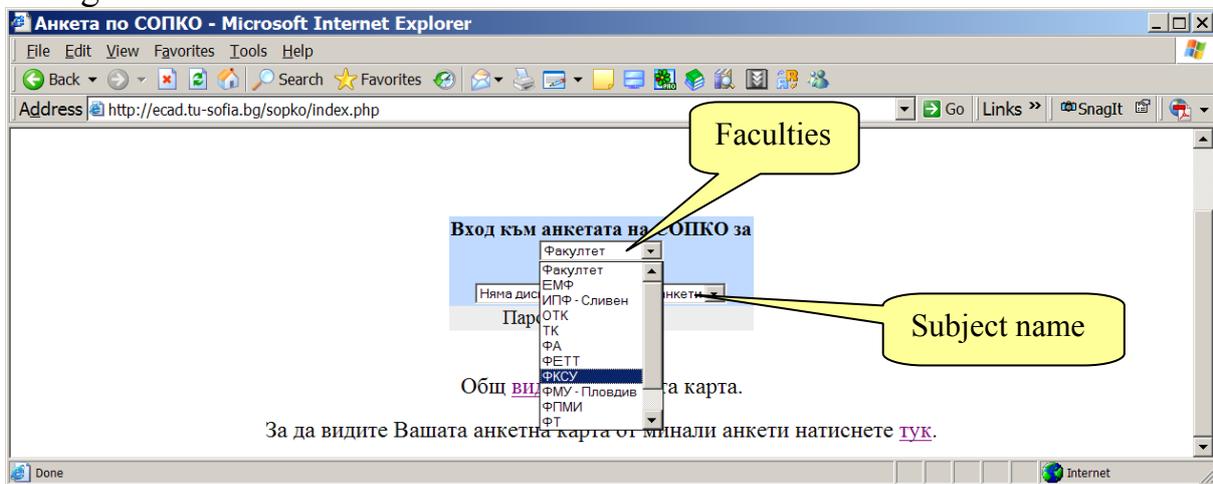


Fig.3. Survey entrance.

The access is granted after supplying a correct access code.

3. PRIMARY PROCESSING

The results from a survey are being stored in a database. There is some real time processing. The first direct results are related to the percentage of the participants who have completed the survey, the percentage distribution in each section, and the percentage distribution of each answer. The status of each survey is denoted in a

different colour – those, which are active and have results, are in green, the active without results are in yellow, the old inactive with results are in white and the old inactive without results are in red – Fig. 4.

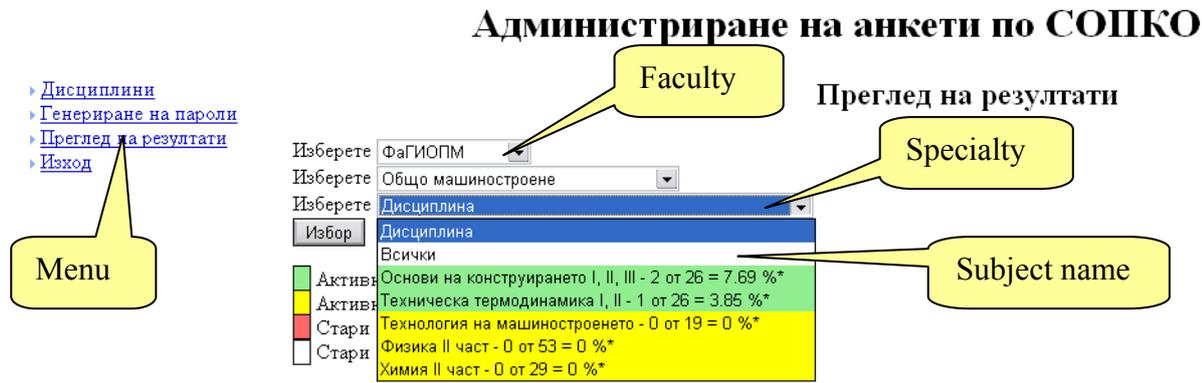


Fig.4. Survey administration window.

Some elements from the primary processing are shown in Figure 5.

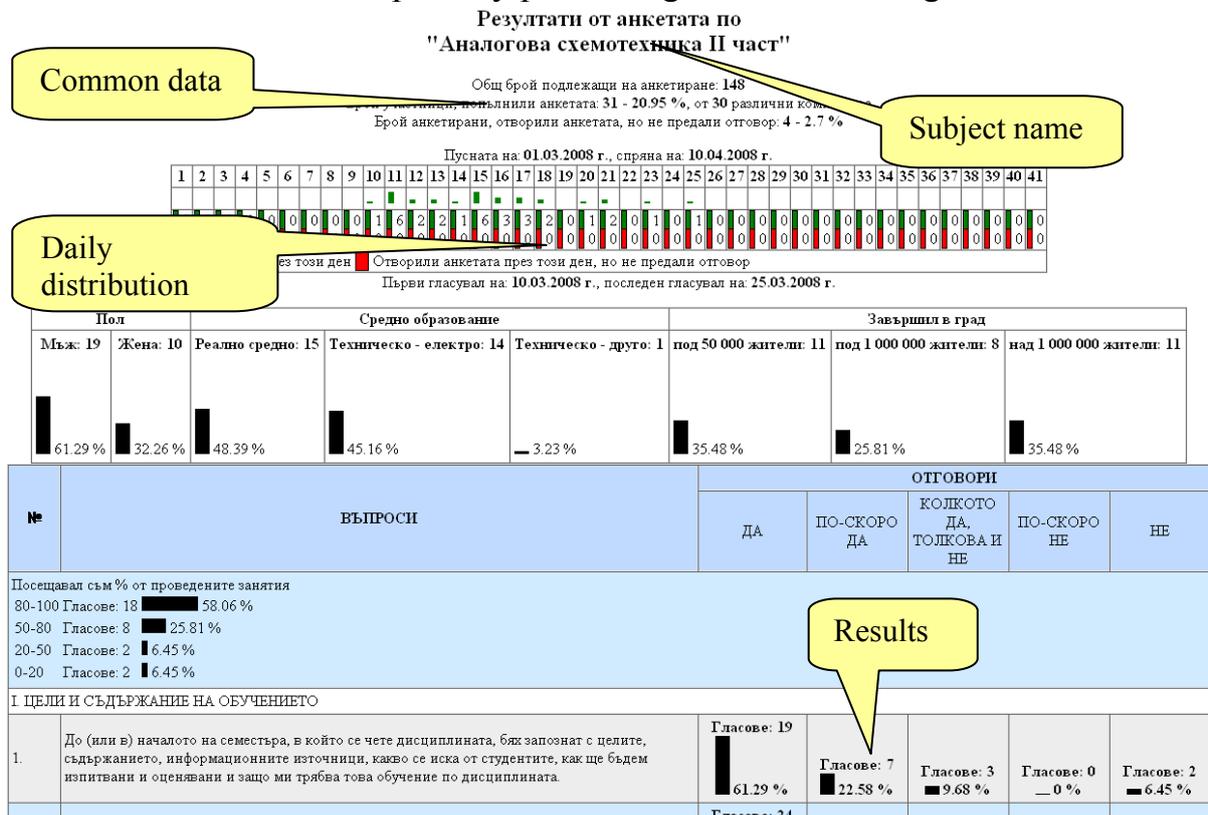


Fig.5. Results from the primary processing.

This data could be indicative about the activity of the participants distributed in time and groups (male, female, etc.)

There are arguments both against and in favor of the survey's credibility – it's not reliable at all or it is totally reliable. Maybe the truth is not right in the middle but slightly towards possible credibility.

As it was mentioned above the first milestone was to generate the necessary number of access codes. The second milestone is to mark the access code as used

after the completion by a participant. The third milestone is the careful selection of supervisors – those who distribute the access codes. Some procedures could be discussed here too. The fourth milestone is the availability of the completed survey card after the end of the survey. It could be reviewed by entering the same access code.

The indirect methods are related to the dynamics and process of completing the survey – the number of participants that are completing it at the same time, the IP address of their computers, etc. For example it is very unlikely that the main number of participants could complete the survey with same answers and especially from one and the same IP address in a few minutes.

4. VALIDATION

One of the approaches for the assessment of the surveys' credibility is to undertake further processing of the processes and do correlation analyses. This is a separate task. In relation to that the direct survey data are being transferred to a secondary web site where they are being additionally processed to obtain numerical assessment, filtering, correlation and statistical analysis – Fig. 6.

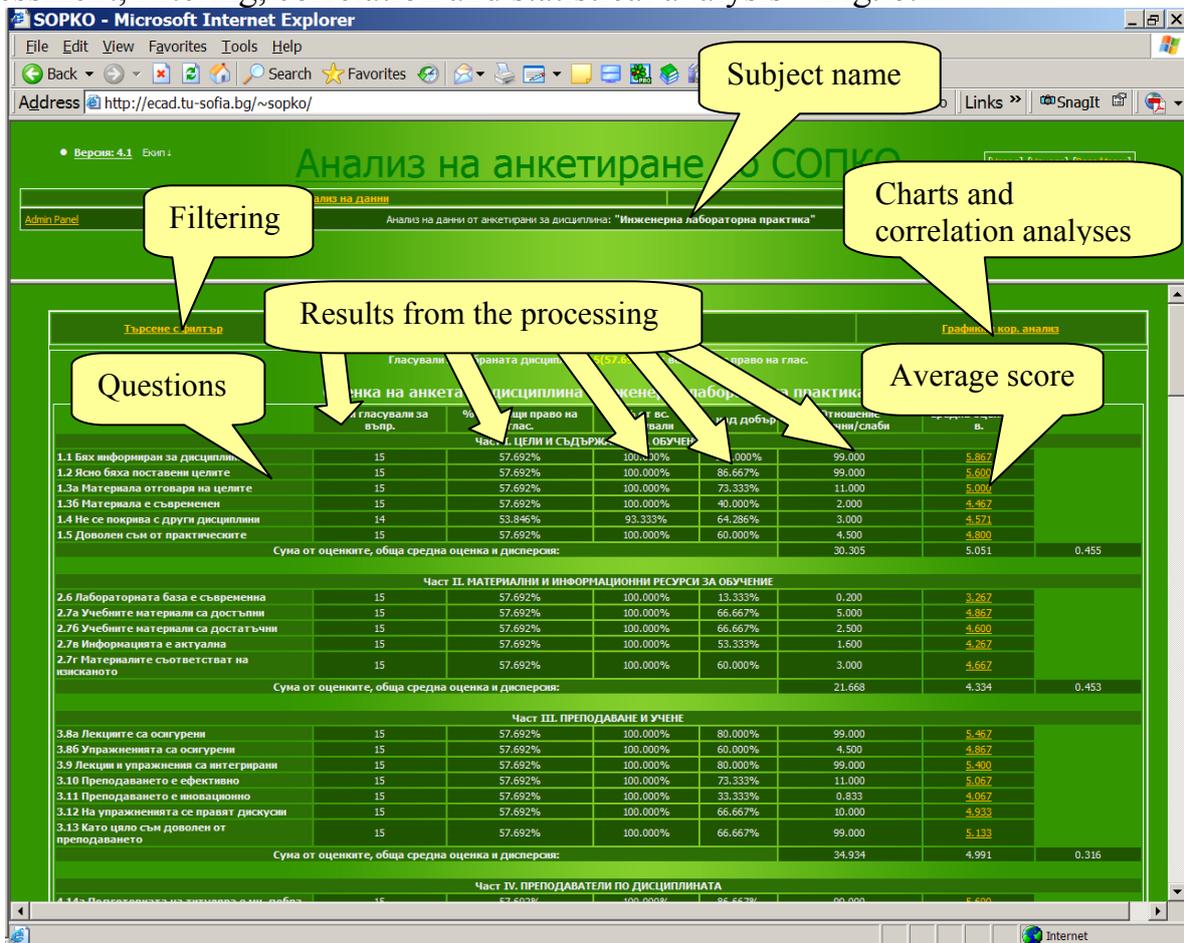


Fig.6. Secondary processing.

Maybe the best result could be obtained in carrying out a comparative analysis of survey data with data from other systems. For this purpose, however accumulation of

statistical results is necessary. Example indicators could be the following:

1. Distribution of male/female to the same allocation in the initial inquiry group.
2. Distribution of those who have completed the survey on score and, for example, the average statistical score of exams.
3. Average class attendance percentage shown by the survey to the class attendance registered outside the survey.
4. Statistical correlation between the breakdown by the type of secondary education of participants and the initial allocation of the same types.

These indicators should be used after a preliminary statistical verification in respect to the activity of the participants in the survey. For example, regarding the first indicator immediate application is valid under the assumption of equal activity of males and females.

5. CONCLUSIONS

The preliminary results from the surveys show that they are an effective tool for obtaining feedback from the students. The assessment of the credibility of the results may also be checked, but this requires prior accumulation of statistical data, both about the progress of surveys, and from external sources. Such external sources could be e-learning systems or other similar databases.

6. ACKNOWLEDGMENT

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