

EXPERIENCES ON TEACHING QUESTIONNAIRE DESIGN

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ABSTRACT. In this article an experiment on teaching questionnaire design is presented. The questionnaires made by 67 first year students were analyzed in order to find the most common design mistakes. After students have analyzed the gathered data, they were asked to evaluate their questionnaire in the view of the obtained results and draw some conclusions about what they should have done differently. It turn out, that they have learnt more from experiencing the difficulties coming from the bad question design, than from the presented questionnaire design principles.

Keywords: *teaching ICT, creating surveys, self-regulated learning*

ZUSAMMENFASSUNG. In diesem Artikel wird ein Experiment, auf das Lehren Fragebogen-Design präsentiert wird. Die Fragebögen, die von 67 Studenten im ersten Studienjahr analysiert wurden vorgenommen, um die Suche nach den am häufigsten Design-Fehler. Nachdem die Schüler haben, analysiert die gesammelten Daten, wurden sie gebeten, ihren Fragebogen im Hinblick auf die erzielten Ergebnisse zu bewerten und einige Schlussfolgerungen darüber, was sie hätte tun müssen anders zu ziehen. Sie wiederum darauf hin, dass sie gelernt haben, mehr von den Schwierigkeiten erfahren, die aus den schlechten Frage Design, als von den vorgelegten Fragebogen Design-Prinzipien.

Stichworte: *ICT-Unterricht, Umfrage erstellen, selbstregulierend Lehren*

1. Introduction

Information and communication technologies (ICT) contain all the methods/tools that help in collecting, processing and disseminating information. Survey is an efficient process for collecting useful information. The main tool of a survey is the questionnaire. Thus development of questionnaire designing skills could be integrated in the objective list of teaching ICT. Questionnaire design is an efficient ICT exercise: it needs to know and follow some rules, but in the same time the designer has to be creative.

The aim of the article is to present an experiment of the author on teaching questionnaire design for first year Psychology and Pedagogy students at Babes-Bolyai University. The questionnaires of 67 students are analyzed and the most common design mistakes are identified. After analyzing the data, students were asked to evaluate their questionnaire in the view of the obtained results and draw some conclusions about what they should have done differently.

2. Theoretical background

Principles in designing questionnaires

“A survey is a data-gathering and analysis approach in which respondents answer questions or respond to statements that were developed in advance.” (Kasunic, 2005) Thus the survey is a process. The main steps of conducting a survey are the following: the identification of the research objectives and of the target audience; the design of the sampling plan; the development of the questionnaire; the pilot test of the questionnaire; the distribution of the questionnaire; the analysis of the results, and the writing of the report (Kasunic, 2005). We observe, that the questionnaire is the instrument of a survey. The most important steps for designing the questionnaire are: to determine the questions to be asked; to select the item type for each question; to formulate exactly the questions; to design the question sequence; to design the overall questionnaire layout. Nowadays the survey design has developed, the online questionnaire became usual. Online surveys has many advantages, they are cost efficient, the delivery of them are faster, the response time is shorter, the gathering of data is quicker, and they are environmental friendly (Yung & Trumbo, 2000). The contras regarding online survey are related with spam/privacy concerns and the possibility of multiple submissions. One important disadvantage of online surveys is, that the demographic profile of the Internet users does not represent the general population (Walonick, 2004). Thus online questionnaires are useful only, when the target group is those using frequently the Internet.

The effective design of a survey was the concern of many works, among which Dillman, 1978; Sudman & Bradburn, 1982; Dillman, Tortora & Bowker, 1998; Brace, 2004; Bradburn, Sudman & Wansink, 2004; Iarossi, 2006; Dillman, 2007; Brace, 2008. In the following we mention the most important principles.

The questionnaire has to have a welcome text, which should motivate the respondent to fill in the questionnaire (Dillman, 2000). This text should contain the purpose of the survey, the ways of using the data, and general instructions on how to fill in the questionnaire. Instructions are essential in order to get accurate data. It is important to give also information on how long will take to answer the questions (Iarossi, 2006).

The used language should be simple, spelling and grammar should be accurate. If we use sophisticate words or jargon there is a high probability that the respondent won't understand the question. Spelling and grammar mistakes, beside the possibility of misunderstanding the text, give an unprofessional impression about the designer of the questionnaire. The text should use the special characters of the language of the questionnaire.

When formulating the questions, we have to be sure that they are easy and quick to answer (Iarossi, 2006).

It is essential to choose carefully the type of each question. Drop-down menus are effective if the list of possible responses is long, but not for questions

with only few options. Drop-down menus or radio buttons can be used only when the response options are mutually exclusive. Open-ended questions could be used when asking about feelings, opinions, and attitudes. In many cases respondents leave these questions blank, because it is difficult for them to express their feelings, opinion, or/and because it need more time to write down the answer (Brace, 2004). Thus the percentage of open-ended question in a questionnaire shouldn't be high. In case of multiple-choice questions (drop-down menus, radio-buttons, check boxes, etc) all reasonable response alternatives should be included. If it is impossible to enumerate all the possible alternatives, give the most likely ones and let an "other" alternative to the respondent, to write his/her own choice.

Questions, which address two issues at one, should be avoided (Dillman, 2000). Negative or double negative expressions in a question could lead to incorrect answer, so they shouldn't be used when formulated a question. Leading questions influence the results of the survey, so shouldn't be used.

Questions should be grouped by topic and order logically.

3. Research

Research design

The research took place in the first semester of the 2009/2010 university year. In the research the first year Psychology and Pedagogy students were participated from Babes-Bolyai University.

ICT is a compulsory subject for Pedagogy students and optional for Psychology students. As a semester ending project, students were asked to design a survey: to find a topic for the survey, to identify the objectives and target group, to design the questionnaire, to develop the online questionnaire, to send the link of the questionnaire to their colleagues in order to collect as many answers as possible, to analyze the data, to write a report, and to edit a presentation to present their finding. Conducting a survey is a complex task, which gave the opportunity to review most of the knowledge learnt during the semester and to evaluate students' complex ICT competencies.

67 students have developed a questionnaire. The topic of the questionnaires covers a variety of thematic, just some examples: how students use their free time, how first year students have managed to get used with university life, what kind of music students listen, do students try to eat healthy food, do students smoke, do students find important to protect the environment, etc. There was one questionnaire, which looked more as a knowledge test about animals. All the other 66 questionnaires really tried to explore different aspects of students' life. These questionnaires were analyzed in order to identify the design mistakes made by the students. After students have analyzed the gathered data, they were asked to evaluate their questionnaire in the view of the obtained results and draw some conclusions about what they should have done different.

Results

In Table 1 the identified mistakes are collected.

Table 1. *Identified mistakes when designing a questionnaire*

Mistake	Frequency (in how many questionnaires this mistake appears)
There is not a description of the questionnaire in the beginning.	67
The text of the question contains spelling or grammatical mistakes.	27
There is question, which is textbox type, but should be multiple-choice type (checkbox or radio buttons).	26
There is a multiple choice type question, where it is highly possible that the respondent have different choice that those enumerated, but there is no "other" choice.	16
There is question, which is checkbox type, but should be radio button type.	14
There are not enough choices in case of some multiple-choice questions.	12
The choices in a radio button (where only one choice could be selected) type question are overlapping.	11
In a radio button or checkbox type question the last choice contains a textbox too.	10
There is question, where there are only 2-3 choices, but the list type item is used.	9
There is question, which require an estimation made by the respondent related with the opinion of others.	5
The question is containing more questions.	5
The questionnaire contains leading question(s).	3
There is question, which is radio button type, but should be checkbox type.	3
There are very similar questions.	1
The questionnaire is more a knowledge test.	1
There is incomplete question.	1
There is a multiple choice and a textbox type question in one question.	1
The choices are numbered in a multiple choice type question.	1
The choices for a question are written in a different language than the language of the questionnaire.	1
The text of the question is not explicitly written.	1

In the following we will discuss these mistakes.

All the students neglected the recommendation of writing an introductory text for their questionnaire. They didn't consider it necessary and they found it time consuming to write welcome text and instructions.

Concerning the language used in the questionnaires, it is surprising that 27 (40,30%) of the questionnaires contain spelling or grammatical mistakes. These questionnaires were written in Hungarian language, and 12 questionnaires (17,91 %) of them didn't use the special characters for Hungarian language. One questionnaire contains choices for a multiple-choice question written in Romanian.

The texts of the questions are not always rigorously formulated. In Example 1 there are two connected questions. The first question is almost well-formulated (maybe is missing the place of the Internet connection: at home, at the university, etc.), but the second question can't be understood without the first one.

Example 1. Do you have Internet connection?

yes no

And mobile?

yes no

Another group of mistakes are related with the right choice of the question type. In 26 questionnaires (38,81 %) there is at least one question, which is textbox type, but should be multiple-choice type. These questions are related, for example, with the university, faculty, and age of the student. Making a list of the possible ages or possible faculties and formulate the question as a multiple choice one, it makes the analysis of the result much easier. The high percentage of the questionnaires with this mistake is surprising, as the teacher has underlined the importance of using multiple-choice questions where possible in order to be easier to analyze the data by computer. In 14 questionnaires (20,90 %) there is at least one question, which should be radio button type questions (where only one choice could be selected), but checkboxes are used. In Example 2 the choices are mutually exclusive, thus checkboxes should be used. Because of the high number of choices, it is even better to use drop-down menu (list). There are 9 questionnaires (13,43 %), where the drop-down menus are used for a 2-3 choice question.

Example 2. How many hours do you listen music?

1 2 3 4 5 6 7 8 9 10

In 12 questionnaires (17,91 %) there are not enough choices in case of multiple-choice questions. Example 3 is a question related with free time, but gives only four choices (maybe the designer of the questionnaire put his/her own choices). Different persons could use their free time in a great variety of ways, so the choice

list should be longer, and the last choice should be “other”, with a textbox near, giving the possibility to enumerate other free time activities too. Actually, in case of 16 (23,88%) of the questionnaires there are multiple-choice questions, where the list of choices should be long and is high likely that the designer can't cover all of the possible responses, but there is not an “other” choice included.

Example 3. What do you like to do in your free time?

- taking a rest
- watching TV
- walking
- partying

In 11 (16,42%) questionnaires the choices in a radio button type question are not mutually exclusive. See Example 4.

Example 4. Do you use to listen music?

- yes
- no
- never
- rarely
- often

In 5 questionnaires (7,46 %) there is at least one question, which requires that, the respondent estimate the answers of his/her colleagues (Example 5). This kind of question doesn't give accurate information.

Example 5. In your opinion, how many percentages of the students prepare their homework for the next day before going to a party?

- 70%
- 50 %
- 30%
- less than 30%

Example 6 is a contra example for formulated questions. It contains more questions in one, these questions should be different type items.

Example 6. If you are in love, are you losing weight? Are you trying to look better? Why? Or are you not care about your body?

- Yes, I loose weight, because I want to look better.
- I don't care about my body, if my boyfriend/girlfriend loves me, he/she likes me how I am.

After analyzing the data, students were asked were asked to evaluate their questionnaire in the view of the obtained results and draw some conclusions about what they should have done different. All of the students (100%) who have used textbox type questions where multiple-choice questions would have been more adequate, have identified the difficulty of analyzing the obtain data for these questions (for example, asking the faculty, some students wrote “Psychology”, some “Pedagogy”, some “Psychology and Pedagogy”, some “Psychology and Educational Sciences”, so it was impossible to process this data by the computer) and said, they will be more careful in the past with this kind of questions.

6 students from 12 (50%), who have used multiple-choice questions without enough choices, have identified this mistake when drawing the diagrams. 7 students from 11 (63,64%), whose radio button type question contains not mutually exclusive choices, had the conclusion, that they can't obtain accurate information from that question.

Unfortunately, the other mistakes identified in this article weren't discovered by the students.

4. Conclusions

Designing a questionnaire is a complex activity. It requires the knowledge of some important questionnaire designing principles, creativity, careful designing, and a deep overview of the researched topic.

Solving creative ICT tasks, in many cases students are ignoring any rules, and trying to finish the task as soon as possible, without trying to do the job as good as they can. The analyzed questionnaires reflect this attitude of the students.

The main conclusion of this research is that students follow more the principles/rules, if they discover them, or if they experience the difficulties obtained, when they ignore some important principle/rule.

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