



## How To...

18

...How to design a questionnaire for computer analysis

SECTION 1 - GENERAL

There is no one particular or one best way to design a questionnaire for computer analysis, as numerous factors dictate the layout, coding required etc. However, there are certain considerations which must be taken into account to avoid unnecessary problems arising.

Careful thought at the time of designing a questionnaire can avoid many wasted hours later in the exercise.

When designing a questionnaire, there are three main areas to consider:

1. The Respondent
2. Data Preparation
3. The Analysis

1. The Respondent

The questionnaire must be clear and easy to answer. Some points to consider are:

- a) The length of the questionnaire - try to keep it as short and concise as possible, but do not make it complicated to answer when trying to do this. It is often better to make the questionnaire a little longer in order to ensure that it is easy to answer.
- b) Instructions - include clear instructions, sometimes even for each question.
- c) Answering of questions - where possible, a respondent should not have to read through questions which do not apply to him/her. Filter questions can be used to achieve this and an example will be given later in this document.
- d) Uniformity in the design of the questionnaire is important to the respondent. (See Section 2)

Remember that the respondent may know nothing about computerisation, and knows nothing about your aims and the intended analysis! You have to be clear in indicating what answers you require. Do not leave anything to chance.

The more straightforward the task of answering the questionnaire, the more accurate and reliable the results will be.

## 2. Data Preparation

- a) Try to avoid unnecessary extra coding by clerical staff (or yourself!!) by designing the questionnaire so that the data may be entered into the computer directly from the questionnaires. The questionnaire must hence be designed so that the data preparation staff can easily process it.
- b) Numbers or codes to be entered and the appropriate column numbers must be clearly indicated. The data preparation staff should not have to pause to consider what they should be entering.
- c) Before you finalise the design of your questionnaire, take the time to check it very carefully. One of the most common errors is found in column numbering and allocation.
- d) Always 'edit' the responses on the questionnaires before you hand them in for data entry.

## 3. The Analysis

- a) It is most important to know what you are setting out to achieve before you design a questionnaire.
- b) You have to be sure that the questions you are asking and the coding of the data will enable you to perform all the analyses you may require.
- c) You must also make sure that the design of your data file is suited to the statistical analyses you require.
- d) Questions, together with suitable coding, must be included to identify any groupings you may require in the analysis of the data. e.g. area, sex, age etc.
- e) The inclusion of filter questions can help at the analysis stage when you need to obtain subsets of the data.

SECTION 2 - THE DESIGN

Listed below are a few rules which are worth following:

1. Always include an identification number on the front of each questionnaire. Allow sufficient columns for this number: if you have less than 100 respondents or observations in total, 2 columns will be sufficient; if you could have 100 or more respondents, but definitely no more than 999, 3 columns will be required.....etc. If you are not sure rather be safe and allocate one more column than you may require.

<u>Example</u>		HEALTH QUESTIONNAIRE			
	Ident.No. (Office Use Only)	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="3"/>		Col.No. (1-3)	
SECTION A - BACKGROUND INFORMATION					
Q1. What is your sex? (Circle <u>one</u> number)	Male		1	(4)	
	Female		2		

2. If your questionnaire will be longer than 132 columns of data, you will have to spread your data over 2 records for each respondent or observation. You will then need to include a record number as well as an identification number at the front of each record for each respondent/observation.

<u>Example</u>		HEALTH QUESTIONNAIRE			
	Ident.No. (Office Use Only)	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="3"/>		Col.No. (1-3)	
	Record No.	<input type="text" value="1"/>		(4)	
SECTION A - BACKGROUND INFORMATION					
Q1. What is your sex? (Circle <u>one</u> number)	Male		1	(5)	
	Female		2		
:	:	:	:	:	
:	:	:	:	:	
:	:	:	:	:	
				(New Record)	
		HEALTH QUESTIONNAIRE			
	Record No.	<input type="text" value="2"/>		Col.No. (4)	
SECTION D - LIFE SATISFACTION					
Q1. How satisfied are you with your work(if employed) or home duties (if not employed)? (Circle <u>one</u> number)					
1	2	3	4	5	(5)
Very Unsatisfied	Unsatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	

3. Column numbers should preferably be located on the right hand side of the page, and if possible, the answers should also be on the right hand side. This is not always feasible and other layouts are acceptable as long as the coding and column numbers are clear and in a logical order.

Example with coding on right:

SECTION A - BACKGROUND INFORMATION

Q1. What is your sex? Male 1 (4)  
 (Circle one number) Female 2

Q17. Do you suffer from any of the following?  
 (Circle one number for each category)

	No	Often	Yes Sometimes	Rarely	
Migraine Headaches	1	2	3	4	(30)
Asthma	1	2	3	4	(31)
Backache	1	2	3	4	(32)

Example with coding across the page:

SECTION D - LIFE SATISFACTION

Q1. How satisfied are you with your work (if employed) or  
 home duties (if not employed)?  
 (Circle one number)

1	2	3	4	5	(5)
Very Unsatisfied	Unsatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	

4. Try to keep the method of answering questions as uniform as possible. If you cannot do this, clear instructions for each question would help the respondent and ensure that you get the correct information entered on the questionnaire.

Example

Q1. What is your sex? (Circle <u>one</u> number)	Male Female	1 2	(4)
Q2. What is your age (in years)? (Fill in the boxes provided)		<input type="text"/> <input type="text"/>	(5-6)
Q3. What is your marital status? (Circle <u>one</u> number)	Single Married Widowed De facto	1 2 3 4	(7)

5. Remember that in order to type in, for example, a two-digit or two-character code, you need 2 columns. It is easy to make the mistake of not allowing sufficient columns to enter the response to a question. Consider the following two examples:

Example a

Q22. How many students are enrolled in your school? (Fill in the number in the boxes provided)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	(16-19)
---	---	---------

Notice that 4 columns have been allocated as there may be schools which have in excess of 999 students, but certainly less than 9999 students.

Example b

Q15. What is your age? (Circle <u>one</u> number)	15-19 years 20-24 years 25-29 years 30-34 years 35-39 years 40-44 years 45-49 years 50-54 years 55-59 years 60+ years	01 02 03 04 05 06 07 08 09 10	(67-68)
--	--	--	---------

Notice that 2 columns are required to enter the response to this question because there are more than 9 categories. In order to enter the code '10', you need two columns, and although not all respondents will enter '10', your data is in fixed format and column numbers must be the same for each respondent.

### SECTION 3 - TYPES OF CODING

As previously mentioned, there is no one best way to design a questionnaire, but some practices are better than others.

Similarly, numerous types of coding are acceptable, but the type you use may depend on a number of factors - eg the types of questions you are asking, the number of questions on the questionnaire, who will be filling in the questionnaire, etc.

Some preferences are listed below:

1. It is not a good idea to ask a respondent to place a mark over the number he/she selects. The data preparation staff cannot then clearly read the responses. eg the following should not be used:

a)	Sex? (Mark your response with a cross)				
	Male			1	(10)
	Female			X	
b)	Do you think this service is adequate? (Tick one number)				
	Yes	No	Don't know		(11)
	↓	2	3		

A better way to handle these two examples is as follows:

a)	Sex? (Circle <u>one</u> number)				
	Male			1	(10)
	Female			②	
b)	Do you think this service is adequate? (Circle <u>one</u> number)				
	Yes	No	Don't know		(11)
	①	2	3		

2. Asking a respondent to fill in numbers is often unavoidable - eg if you need to know the number of students, money values, or some other quantity (usually continuous data).

However, if it is not necessary (depending on the data required), then avoid it because problems often arise with legibility of entries, entering only one digit per box, etc., and sometimes extensive editing of questionnaires is then required. Clear instructions may help overcome such problems.

Sometimes you can categorize such responses, but it depends on the analyses you require.

3. Avoid alpha coding where possible. Numeric coding is much quicker for the data preparation staff and is more economical in the processing (analysis) stage.

In some SPSS-X and SAS statistical procedures, numeric coding is required.

4. 'Open-ended' questions are sometimes unavoidable. They require extensive work on the part of the coder (often yourself!!) before the questionnaires can be handed in for data entry.

Example

Q10. If you have any comments about computers and computer education you would like to make, please include them below.

.....

.....

.....   (38-39)  
(Office Use Only)

.....

.....

.....   (40-41)  
(Office Use Only)

.....

.....

.....   (42-43)  
(Office Use Only)

Notice that three sets of 2-digit codes have been allocated to handle a possible number of three responses from each respondent, and the answers may be coded from 1 to 99.

A coder has to read through all responses, categorize them, and assign each different response a code between 1 and 99. The coder then has to go through all the questionnaires again, filling in the codes for each respondent. These tasks are extremely time-consuming.

Avoid this type of coding unless it is absolutely necessary! (e.g. if you just cannot channel peoples responses into pre-allocated choices.)

5. If your questionnaire is designed so that numbers appear in continuous rows or columns, breaking these numbers up into groups of 5 assists the data preparation staff.

1. <input type="checkbox"/>	6. <input type="checkbox"/>	11. <input type="checkbox"/>	16. <input type="checkbox"/>
2. <input type="checkbox"/>	7. <input type="checkbox"/>	12. <input type="checkbox"/>	17. <input type="checkbox"/>
3. <input type="checkbox"/>	8. <input type="checkbox"/>	13. <input type="checkbox"/>	18. <input type="checkbox"/>
4. <input type="checkbox"/>	9. <input type="checkbox"/>	14. <input type="checkbox"/>	19. <input type="checkbox"/>
5. <input type="checkbox"/>	10. <input type="checkbox"/>	15. <input type="checkbox"/>	20. <input type="checkbox"/>

SECTION A (cont.)

Col.No.

Q8. What type of work do you do most frequently?  
(Circle one number)

- |                            |    |         |
|----------------------------|----|---------|
| Management                 | 01 | (12-13) |
| Supervisory, professional  | 02 |         |
| Administrative support     | 03 |         |
| Skilled tradesman          | 04 |         |
| Tradesman or manual worker | 05 |         |
| Student                    | 06 |         |
| Housewife                  | 07 |         |
| Retired                    | 08 |         |
| Self employed              | 09 |         |
| Unemployed                 | 10 |         |
| Other                      | 11 |         |
| (please specify.....)      |    |         |

SECTION B - FITNESS, WEIGHT

Q1. Regarding your current level of fitness, do you think you are:  
(Circle one number)

- |                  |   |      |
|------------------|---|------|
| Very unfit       | 1 | (14) |
| Moderately unfit | 2 |      |
| Uncertain        | 3 |      |
| Fit              | 4 |      |
| Very fit         | 5 |      |

Q2. What is your weight(in kg) ?  
(Fill in the boxes provided)

e.g. 1 9 9 . 2  
6 3 . 5  
7 1 . 0

			.	
--	--	--	---	--

 (15-19)

Q3. Do you consider that you are:  
(Circle one number)

- |                                |   |      |
|--------------------------------|---|------|
| Very overweight                | 1 | (20) |
| Moderately overweight          | 2 |      |
| Slightly overweight            | 3 |      |
| Correct weight for your height | 4 |      |
| Underweight                    | 5 |      |

Q4. How often do you have at least 15 minutes of rigorous exercise?  
(Circle one number)

- |                          |   |      |
|--------------------------|---|------|
| More than 5 times a week | 1 | (21) |
| 3-5 times a week         | 2 |      |
| Once or twice a week     | 3 |      |
| A few times a month      | 4 |      |
| Very seldom              | 5 |      |



SECTION C - SYMPTOMS

Have you noticed any of the following symptoms occurring over the last TWO MONTHS. If they have been present, indicate the degree by circling the one appropriate number for each question.

Slight = few times per month or less  
Moderate = few times per 2 weeks  
Severe = few times per week or more

Please answer all questions.

Col.No.

	NONE	SLIGHT	MODERATE	SEVERE	
Q1. Face feels flushed or hot	1	2	3	4	(22)
Q2. Tight, acid or painful stomach	1	2	3	4	(23)
Q3. Nail biting	1	2	3	4	(24)
Q4. Sweaty, shakey or cold hands	1	2	3	4	(25)
Q5. Frequent urge to urinate	1	2	3	4	(26)
Q6. Eye tension or twitching or strain	1	2	3	4	(27)
Q7. Dry mouth or throat, voice quivering	1	2	3	4	(28)
Q8. Butterfly stomach, nauseous	1	2	3	4	(29)
Q9. Shallow, rapid breathing	1	2	3	4	(30)
Q10. Heart pounding	1	2	3	4	(31)
Q11. Skin rashes	1	2	3	4	(32)
Q12. Grinding teeth, clenched jaw	1	2	3	4	(33)
Q13. Eating binges or eating too little	1	2	3	4	(34)
Q14. Diarrhoea or constipation	1	2	3	4	(35)
Q15. Back or neckache, stiffness	1	2	3	4	(36)
Q16. Headaches	1	2	3	4	(37)
Q17. Irritable, angry or quick temper	1	2	3	4	(38)
Q18. Avoiding people or responsibilities	1	2	3	4	(39)
Q19. General fatigue, constant tiredness	1	2	3	4	(40)
Q20. Insecure or unexplained fear	1	2	3	4	(41)
Q21. Loss of enjoyment of life	1	2	3	4	(42)
Q22. Over-emotional or easily hurt	1	2	3	4	(43)
Q23. Persistently keyed-up	1	2	3	4	(44)
Q24. Feeling unable to cope	1	2	3	4	(45)
Q25. Unable to sleep, sleeping too much	1	2	3	4	(46)
Q26. Feeling pressed for time	1	2	3	4	(47)
Q27. Can't concentrate, poor memory	1	2	3	4	(48)
Q28. Nervous or anxious	1	2	3	4	(49)
Q29. Dissatisfied with your sex life	1	2	3	4	(50)
Q30. Feel depressed, negative, or gloomy	1	2	3	4	(51)

SECTION D - LIFE SATISFACTION AND HEALTH

Col.No.

Q1. How satisfied are you with your work(if employed) or home duties(if not employed)?  
(Circle one number)

1	2	3	4	5	(52)
Very Unsatisfied	Unsatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	

Q2. How satisfied are you with your personal life?  
(Circle one number)

1	2	3	4	5	(53)
Very Unsatisfied	Unsatisfied	Slightly Satisfied	Moderately Satisfied	Very Satisfied	

Q3. How would you currently describe your overall state of health and well-being? (Circle one number)

1	2	3	4	5	(54)
Ill	Not well	O.K.	Well	Very Well	

Q4. When you have personal problems or are very worried, how much understanding and help do you get from people you know?  
(Circle one number)

1	2	3	4	5	(55)
Very Little	Some	A Fair Amount	A Lot	A Great Deal	

This questionnaire contains extracts from a questionnaire developed by Ron Cacioppe for the Health Education Unit of the WA Public Health Department.  
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Examples of categorical data - single digit code

3. Did you find that getting a place in the course that you are in was:  
(circle one number)

(Col.No.)

Very easy?.....	1	(8)
Easy?.....	2	
Somewhat difficult?	3	
Difficult?.....	4	
Very Difficult?...	5	

4. In general, do you believe that getting a place for the great majority of students studying in your course was:

(circle one number)

Very easy?.....	1	(9)
Easy?.....	2	
Somewhat difficult?	3	
Difficult?.....	4	
Very Difficult?...	5	
Don't Know?.....	6	

SOCIAL ASPECTS OF TERTIARY LIFE

This section seeks information about your experiences of various social aspects of life as a tertiary student.

(Please circle the number representing your answer)

9. So far, have you had a lot of contact with fellow students .....

	YES	NO	DON'T KNOW OR NOT APPLICABLE	(Col.No.)
(i) in academic activities on campus?	1	2	3	(26)
(ii) in academic activities off campus?	1	2	3	(27)
(iii) in social activities on campus?	1	2	3	(28)
(iv) in social activities off campus?	1	2	3	(29)

10. So far, have you had a lot of contact with teaching staff .....

(i) in academic activities on campus?	1	2	3	(30)
(ii) in academic activities off campus?	1	2	3	(31)
(iii) in social activities on campus?	1	2	3	(32)
(iv) in social activities off campus?	1	2	3	(33)

11. Have you made new friends at your institution? 1 2 3 (34)

12. Are your fellow students from .....

# Example of categorical data - two-digit code

## FIRST YEAR STUDENTS' ACTUAL EXPERIENCES OF TERTIARY EDUCATION

### SURVEY QUESTIONNAIRE

(Col. 1-4)

(office use only)

1. We would like to be able to compare your actual TAE results with those you estimated in our survey last year. May we have your permission to approach the Tertiary Institutions Service Centre for your TAE results?

(circle one number)

Yes....	1
No.....	2

(Col.No.)  
(5)

2. What is your intended major field of study?

(circle appropriate number)

	(Col.No.) (6-7)		(Col.No.) (6-7)
Agriculture .....	01	Law .....	13
Architecture .....	02	Languages .....	14
Art & Design .....	03	Mathematics .....	15
Building & Surveying .....	04	Medicine .....	16
Commerce & Business Studies .....	05	Music .....	17
Computing .....	06	Paramedical (Pharmacy, Nursing, Physiotherapy, Medical Technology, etc.) .....	18
Dentistry .....	07	Physical Education	19
Economics .....	08	Science (Physics, Chemistry, Environmental Science, Biology, etc.)...	20
Education (i.e. teaching) .....	09	Veterinary Studies	21
Engineering .....	10	Others (Please specify) _____	22
English .....	11		
Social Sciences, (Anthropology, History, Geography, Psychology, Social Work, etc.) .....	12		

Example of ranking - notice allocation of column numbers

35. Up to now, which people have had the most significant influence on your experiences with academic staff?

Choose up to three of the following and rank in order of importance by placing the numbers 1,2, or 3 in the appropriate boxes.

	(Col.No.)
Family .....	01
Off Campus Friends .....	02
Fellow Students .....	03
Lecturers .....	04
Tutors .....	05
Technical Staff .....	06
Staff Advisors .....	07
Central Administrative Staff .....	08
Departmental Administrative Staff ..	09
Counselling Service Staff .....	10
Student Guild Personnel .....	11
Others (please specify) _____	12

# Example of Rating on a Scale

## SECTION II. COMPETENCIES REQUIRED BY ALL TEACHERS

\*\*\*\*\*  
\*  
\* ALL RESPONDENTS SHOULD COMPLETE THIS SECTION \*  
\*  
\*\*\*\*\*

\*\*\*\*\*  
\* A number of competencies are considered relevant for all teachers if \*  
\* they are to be computer literate and are to use computers to support \*  
\* or enhance their teaching. For each competency listed below please \*  
\* indicate your level of competence by circling the relevant number on \*  
\* the scale provided on the right as follows: \*  
\*  
\*  
\*  
\*\*\*\*\*

- \* 1 I don't understand the statement \*
- \* 2 I am not competent in this \*
- \* 3 I have some competence in this \*
- \* 4 I am competent in this \*

Col.No.

- 1. Knowledge of elementary computer terminology, eg hardware, software. 

1	2	3	4
---	---	---	---

 (18)
- 2. Ability to use hardware in the school, from switching on of the equipment to the running of programs 

1	2	3	4
---	---	---	---

 (19)
- 3. Experience of using educational computer programs especially in your own subject area 

1	2	3	4
---	---	---	---

 (20)
- 4. Ability to read and write simple programs that work correctly 

1	2	3	4
---	---	---	---

 (21)
- 5. Knowledge of sources of information related to the use of computers in education especially in your own subject area 

1	2	3	4
---	---	---	---

 (22)
- 6. Ability to critically review available computer based learning materials as you would a textbook in your own subject area 

1	2	3	4
---	---	---	---

 (23)
- 7. Ability to incorporate the use of computer based learning materials in your teaching. 

1	2	3	4
---	---	---	---

 (24)
- 8. Ability to discuss at the level of an informed lay person some of the moral and human impact issues of computing as they relate to the use of computers in society in general and education in particular. 

1	2	3	4
---	---	---	---

 (25)

# Example of an Open-Ended Question

\*\*\*\*\*  
 \* In this sub-section please indicate how you gained your current level \*  
 \* of competence and how you expect to increase it by circling the \*  
 \* relevant numbers on the scale provided on the right as follows: \*  
 \* \* \* \* \*  
 \* 1 This is not relevant to me \*  
 \* 2 I am competent enough \*  
 \* 3 Self taught \*  
 \* 4 Inservice training \*  
 \* 5 Undergraduate qualification \*  
 \* 6 Postgraduate qualification \*  
 \* \* \* \* \*

Col. No.

9. a. How did you gain your current level of competence with respect to the above competencies? | 2 3 4 5 6 (26-31)
- b. How do you expect to increase it? | 2 3 4 5 6 (32-37)

10. If you have any comments about computers and computer education you would like to make, please include them below.

.....

.....

.....

.....

.....

.....

.....

.....

(38-39)  
 (Office Use Only)

(40-41)  
 (Office Use Only)

(42-43)  
 (Office Use Only)

\*\*\*\*\*  
 \* If you are NOT and do not anticipate being: \*  
 \* a school administrator, \*  
 \* a school librarian \*  
 \* a specialist teacher of computing, \*  
 \* the school computing resource person, \*  
 \* and you do not wish to develop computer-based learning materials, \*  
 \* \* \* \* \*  
 \* YOU HAVE FINISHED. PLEASE IGNORE THE NEXT SECTION AND RETURN THE \*  
 \* QUESTIONNAIRE AS INSTRUCTED. \*  
 \* \* \* \* \*  
 \* THANK YOU FOR YOUR COOPERATION AND ASSISTANCE. \*  
 \* \* \* \* \*

Example of a different method of answering

LIBRARY SERVICES

OFFICE USE ONLY	
FORM NO	Col No (1-4)
STATE	<input type="checkbox"/> (5)

Question 1 Which library sector most closely describes this library service?  
Tick one box only

- Public/Municipal .....
- Academic .....
- School .....
- Special Government .....
- Special Non Government .....
- Community/Joint Use .....

<input type="checkbox"/>	1	(10)
<input type="checkbox"/>	2	
<input type="checkbox"/>	3	
<input type="checkbox"/>	4	
<input type="checkbox"/>	5	
<input type="checkbox"/>	6	

**LIBRARY SYSTEM**

Note: Definitions

A centrally administered library service is defined as a library service with a central library and administration, exercising regular control over branch libraries.  
Branch library is defined as being in a physically separate building with its own stock and staff.

Question 2 Is this library service a centrally administered service which controls branch libraries?  
Tick appropriate box

Yes	<input type="checkbox"/>	1	(11)
No	<input type="checkbox"/>	2	

Question 3 If yes in question 2, how many branches does this library service administer?  
(Do not count the central library).

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(12-14)
--------------------------	--------------------------	--------------------------	---------

**HOURS AND DAYS OF OPENING**

Note -

- a) If this library service has branches, answer for the central library only
- b) If hours and days of opening vary throughout the year answer for the most common weeks.

Question 4 How many hours per week is this library open?  
(Nearest whole hour)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(15-17)
--------------------------	--------------------------	--------------------------	---------

Question 5 How many days of the week is this library open?

<input type="checkbox"/>	(18)
--------------------------	------



SURVEY ON BLOOD PRESSURE (continued)

15

13. Mental Health

16 Questions. Abnormal (2)  
Normal (1) response

a.	1	74
b.	1	75
c.	1	76
d.	1	77
e.	1	78
f.	1	79
g.	1	80
h.	1	81

i.	1	82
j.	1	83
k.	1	84
l.	2	85
m.	1	86
n.	1	87
o.	1	88
p.	1	89

16

14. Subjects

13 codes (reactions)

a. 90 - 91 

0	1
---	---

17

15. Time taken to administer survey (in minutes)

B.P. Measurement 

1	5
---	---

 92 - 93  
on 1st Visit

Mental Health survey 

1	0
2	5

 94 - 95

Total time for 1st visit 

0	3	0
---	---	---

 96 - 98

Total for 2nd visit 

0	1	0
---	---	---

 99 -101

END OF SURVEY