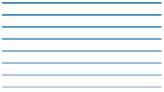


Designing and reporting surveys



Surveys, in which people are asked questions about their behaviour or opinions, are a common feature of academic work. This unit deals with the design of effective questionnaires for surveys, and presents a suitable structure for reporting the results.

1 Conducting surveys

■ What are the reasons for carrying out surveys? List your ideas below.

(a) *To replicate other research*

(b)

(c)

(d)

2 Questionnaire design

- (a) Which is the better question?
- (i) How old are you?
 - (ii) Are you (a) under 20 (b) between 21 – 30 (c) over 30?
- (b) What is the main difference between the two questions below?
- (i) What do you think of university students?
 - (ii) Do you think university students are (a) lazy (b) hardworking (c) average
- (c) How many questions should your questionnaire contain?

When designing your questionnaire:

- (a) Limit the number of questions so the respondent can answer them in a minute or two. Long and complicated questionnaires will not receive accurate replies.
- (b) Keep questions clear and simple, and not too personal.
- (c) Closed questions (bii) are easier to process, but open questions (bi) will collect a wider range of responses.
- (d) You should try putting the questions to a classmate before beginning the full survey, and be ready to modify any that were not clear.



3 Survey language

- Study the report of a survey carried out on a university campus. Complete the report by inserting suitable words from the box below into the gaps (more words than gaps).

sample	conducted	method	respondents	random	questions
majority	questioned	mentioned	interviewees	common	
questionnaire	unusual	generally	minority	slightly	

3.1 STUDENT EXPERIENCE OF PART-TIME WORK

Introduction

With the introduction of course fees and the related increase in student debt, more students are finding it necessary to work part-time. The survey was (a) _____ to find out how this work affects student life and study.

Method

The research was done by asking students selected at (b) _____ on the campus to complete a (c) _____ (see Appendix 1). 50 students were (d) _____ on Saturday 23 April, with approximately equal numbers of male and female students.

Table 1 Do you have or have you had a part-time job?

	Men	Women	Total	%
Have job now	8	7	15	30
Had job before	4	6	10	20
Never had job	14	11	25	50

Findings

Of the (e) _____, 30 per cent currently had part-time jobs, 20 per cent had had part-time jobs, but half had never done any work during university semesters (see Table 1). (f) _____ who were working or who had worked were next asked about their reasons for taking the jobs. The most common reason was lack of money (56 per cent), but many students said that they found the

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work useful experience (32 per cent) and others (g) _____ social benefits (12 per cent).

The 25 students with work experience were next asked about the effects of the work on their studies. A significant (h) _____ (64 per cent) claimed that there were no negative effects at all. However, 24 per cent said that their academic work suffered (i) _____, while a small (j) _____ (12 per cent) reported serious adverse results, such as tiredness in lectures and falling marks.

Further (k) _____ examined the nature of the work that the students did. The variety of jobs was surprising, from van driver to busker, but the most (l) _____ areas were catering and bar work (44 per cent) and secretarial work (32 per cent). Most students worked between 10 and 15 hours per week, though two (8 per cent) worked over 25 hours. Rates of pay were (m) _____ near the national minimum wage, and averaged £6.20 per hour.

The final question invited students to comment on their experience of part-time work. Many (44 per cent) made the point that students should be given larger grants so that they could concentrate on their studies full-time, but others felt that they gained something from the experience, such as meeting new people and getting insights into various work environments. One student said that she had met her current boyfriend while working in a city centre restaurant.

Conclusions

It is clear that part-time work is now a common aspect of student life. Many students find jobs at some point in their studies, but an overwhelming majority (88 per cent) of those deny that it has a damaging effect on their studies. Most students work for only 2–3 hours per day on average, and a significant number claim some positive results from their employment. Obviously, our survey was limited to a relatively small (n) _____ by time constraints, and a fuller study might modify our findings in various ways.

4 Question forms

Question 1 is given above Table 1. What were the other questions in this survey?

■ Using the report, write possible questions below.

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

5 Tenses

What is the main tense in (a) Findings (b) Conclusion?

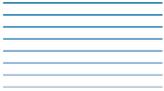
■ Explain the reasons for the difference.

6 Practice

■ You are preparing a survey on one of the following subjects.
Write a questionnaire of no more than six questions to collect the most useful data.

- (a) Patterns of student spending
- (b) Student satisfaction with teaching methods
- (c) Customer attitudes to taxi companies

Writing longer essays



Long essays of 2,500–5,000 words may be required as part of a module assessment. These require more research and organisation than short essays, and this unit provides a guide to how such an assignment may be tackled.

1 Planning your work

Longer assignments are normally set many weeks before their deadline, which means that students should have plenty of time to organise their writing. However, it is worth remembering that at the end of a semester you may have to complete several writing tasks, so it may be a good idea to finish one earlier.

You should also check the submission requirements of your department. These include style of referencing, method of submission (i.e. electronic, hard copy or both) and place and time of submission. Being clear about these will avoid last-minute panic.

- (a) The first thing is to prepare a schedule for your work. An eight-week schedule might look like the example on p. 274.
- (b) How you actually plan your schedule is up to you, but the important thing is to organise your time effectively. Leaving the writing stage until the last minute will not lead to a good mark, however much



research you have done. Although you may be tempted to postpone writing, the sooner you start the sooner you will be able to begin refining your ideas. Remember that late submission of coursework is usually penalised.

Week	Stages of work	Relevant units in Academic Writing
1	Study title and make first outline. Look for and evaluate suitable sources.	1.4
2	Reading and note-making. Keep record of all sources used.	1.2A, 1.2B, 1.5, 1.8
3	Reading, note-making, paraphrasing and summarising. Modify outline.	1.2A, 1.2B, 1.5, 1.7, 1.8
4	Write draft of main body.	1.10
5	Write draft introduction and conclusion.	1.11
6	Re-write introduction, main body and conclusion, checking for logical development of ideas and relevance to title.	1.12
7	Organise list of references, contents, list of figures and appendices if required. Check all in-text citations.	1.8, 3.14
8	Proofread the whole essay before handing it in. Make sure that the overall presentation is clear and accurate.	1.12

(c) Longer papers may include the following features, in this order:

Title page	Apart from the title, this usually shows the student's name and module title and number.
Contents page	This should show the reader the basic organisation of the essay, with page numbers.
List of tables or figures	If the essay includes visual features such as graphs, these need to be listed by title and page number.
Introduction	
Main body	If a numbering system is used, the chief sections of the main body are normally numbered 1, 2, 3 and then subdivided 1.1, 1.2 etc.
Conclusion	
List of references	This is a complete list of all the sources cited in the text. Writers occasionally also include a bibliography, which is a list of sources read but not cited.
Appendices (Singular – appendix)	These sections are for data related to the topic, which the reader may want to refer to. Each appendix should have a title and be mentioned in the main body.

2 Example essay

■ Read the following essay on the topic of nuclear energy. In pairs or groups, discuss the following points:

- What is the writer's position on this issue?
- How does the writer make his/her position clear?

2.1**EVALUATE THE RISKS OF USING NUCLEAR ENERGY AS AN ALTERNATIVE TO FOSSIL FUELS****Introduction**

The search for sources of energy began when humans first started to burn wood or other forms of biomass to generate heat for cooking and smelting. This was followed by using hydropower from rivers and harnessing wind energy with windmills. Later the exploitation of chemical energy began with the burning of coal, oil and natural gas. Then, in the middle of the twentieth century, nuclear energy appeared for the first time, with the hope that it would allow the efficient production of cheap, clean energy (Bodansky, 2004).

Nuclear energy has, however, become the subject of considerable debate, with its proponents claiming that it is beneficial for the environment, since its production does not create carbon dioxide (CO₂) which can lead to global warming. However, its opponents argue that it can damage the environment by creating radioactive waste. It is also linked to diseases in humans, and there is the additional fear that it may be abused by terrorists in future. These critics further argue that other energy sources, such as solar power, could constitute safer alternatives to fossil fuels without posing an environmental threat.

This essay attempts to assess the risks of using nuclear power, in comparison with other sources of energy. The main arguments for employing nuclear energy are first considered, followed by an examination of the safety issues around this source of power, including the safety and security concerns connected with nuclear waste.

1 Reasons for using nuclear energy**1.1 An alternative source of energy**

The rationale behind using nuclear energy stems from the need to find alternative energy sources to fossil fuels, i.e. oil, gas and coal, which are finite. This is a growing concern, due to the increase in the global population, which is accompanied by an increase in energy demand. Mathew (2006) indicates that the annual energy consumption rate per capita in developed countries is between 4,000 and 9,000 kgs of oil, while the rate in less developed countries is around 500 kgs. As a result, the demand for total primary energy, which will accompany

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the population growth, is projected to increase from 12.1 Mtoe (million tons of oil equivalent) to 16.1 Mtoe in 2030. If this increase occurs the total global stock of oil and gas would only be adequate for 250 years, thus requiring the urgent development of other energy sources, which would not deplete the stock of natural resources available for future generations.

1.2 Limitations of other energy sources

Wind energy and solar power are frequently presented as alternative energy sources to fossil fuels. Both are freely available in many parts of the world and their use involves no CO₂ emissions. Sterrett (1994) claims that sufficient wind energy exists to displace approximately eight billion barrels of oil. However, wind energy is unreliable, as wind turbines do not function if the wind speed is too high or low. Similarly, solar power is only effective during the day, and is uneconomic in cool and cloudy climates. Neither of these sources currently offers an efficient and reliable alternative to energy created from fossil fuels.

1.3 Reducing carbon dioxide emissions

An important reason for using nuclear energy is to reduce the emissions of CO₂, which are produced by burning fossil fuels. Bodansky (2004) points out that this type of fuel is the main source of the increase in atmospheric carbon dioxide. The amount of CO₂ produced by each source differs due to the differences in their hydrogen content. For example, natural gas contains one carbon atom and four hydrogen atoms, which combine with oxygen to produce CO₂. The proportion of CO₂ is lower than with the other sources, because the emission depends on the mass of carbon inside the chemical compounds. Although natural gas is thus cleaner than the alternatives, burning all three fuels contributes to the greenhouse effect, which is causing the earth to heat up.

Nuclear energy, however, emits no carbon dioxide, sulphur dioxide (SO₂) or nitrous oxide (NOx). It is estimated that in 2003, in the USA, nuclear energy prevented the release of 680 million tons of CO₂, 3.4 millions tons of SO₂ and 1.3 million tons of NOx. If released from coal burning plants, these gases would have caused the deaths of 40,000 people annually (Olah *et al.*, 2006: 127). According to Richard (2008: 273) the use of nuclear energy in France between 1980 and 1987 reduced CO₂ emissions by 34 per cent.

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1.4 Cost efficiency

Nuclear energy could potentially generate more electricity than other current sources. As Murray (2000: 73) explains, a typical reactor, which consumes 4 kg/day of uranium U235, generates 3,000 MW of energy a day, while other sources such as natural gas, coal or oil require many times the equivalent of that amount of uranium to generate the same energy. Therefore nuclear energy is relatively cost efficient as it uses a cheap raw material.

In recent years the price of oil and natural gas has risen sharply, and this trend seems likely to continue in future. Lillington (2004) suggests that the cost of purchasing fuel for nuclear energy is likely to remain low compared to other energy sources, so it seems likely that this cost advantage will become a significant factor in the comparison between nuclear and other energy sources.

2 Health and safety concerns

2.1 The impact of radiation on the human body

Especially since the Chernobyl accident in 1986 there has been persistent concern about the dangers to human health from nuclear power and nuclear waste. However, it must be understood that nuclear energy is not the only source of radiation, and that there are natural sources in the environment that may be more significant. According to Bodansky (2004: 74) there is far more exposure to radiation from natural sources such as radon and cosmic rays than from all human sources, for example X-rays and nuclear medicine.

Some researchers argue that radon is one of the main causes of cancer diseases among uranium miners. However, radon may be found in all types of soil that contain uranium and radium. Bodansky (2004) points out that the concentration of radon in the soil depends on the type of soil. Hence people's exposure to radon depends on their surroundings, so that people living in houses made from limestone or wood are exposed to less radon than those living in houses built with granite. So it seems that it is not only uranium miners who are exposed to radiation, but also people in certain geological districts.

According to US law the maximum permissible exposure for those living close to nuclear plants is 1/200 rem. However, according to Hoyle (1979) this amount is just 1/20th of the radiation that can be experienced from natural background radiation.

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It has been estimated that nuclear energy is responsible for just 20 deaths per year worldwide, although these figures are disputed by anti-nuclear campaigners who claim that the true figure is as high as 600 deaths. Hoyle (*ibid.*) claims that the average American's life-span is reduced by 1.2 hours as a result of nuclear accidents, and contrasts that with the risk from smoking, which is a loss of eight years if one packet a day is smoked. Consequently, it can be seen that the risk to human health from the use of nuclear power is extremely low.

With regard to medical treatment, which is the next largest source of exposure to radiation, X-rays will expose a patient to radiation amounts from 0.4 to 1 rad (radiation absorbed dose). A broken wrist, for instance, is likely to require 4 X-rays with a total exposure of up to 4 rads. The unit of measurement for radiation exposure is the rem, and one rem is equal to the damage caused by one rad of X-rays; the maximum amount allowed for workers in nuclear plants is five rem per year: the same as the quantity received in the course of a routine medical check-up.

2.2 The impact of radioactive waste on the environment

Nuclear energy is not alone in producing dangerous waste. Lillington (2004) estimates that nuclear energy, in the course of producing 1000 megawatts (MWe) of electricity produces annually about 30 tons of highly radioactive waste and about 800 tons of intermediate and low-level waste. In contrast, a coal-burning plant producing the same quantity of electricity would generate about 320,000 tons of coal ash, of which nearly 400 tons would be hazardous waste such as mercury and vanadium, and at least 44,000 tons of sulphur dioxide. So it can be seen that nuclear energy only produces a fraction of the dangerous wastes emitted from coal-fired power stations, and in addition does not produce greenhouse gases.

2.3 Risks of terrorism

There has been widespread concern that terrorists might steal plutonium to produce nuclear weapons. In general nuclear facilities are tightly controlled, and in practice, it would be very difficult for terrorists to use such stolen material effectively. There are alternative materials such as toxic gas that could produce equally lethal terrorist weapons. However, these concerns could be solved by

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keeping U233 mixed with U238, which would prevent terrorist groups extracting the plutonium and fabricating a bomb.

Conclusion

The risks of nuclear energy in terms of both human health and the environment have been the subject of widespread debate and controversy. This essay has attempted to examine these risks both in terms of human health and environmental damage. It appears that many of these concerns are exaggerated, and that nuclear energy can be seen as a safe, reliable and cost effective alternative to using fossil fuels.

While all energy sources have drawbacks, nuclear should be viewed as a useful and relatively safe component in a mix of sources that can include renewables such as hydro and wind energy and non-renewables such as natural gas. The steady depletion of reserves of oil and the subsequent rise in prices is liable to emphasise this position. Clearly more could be done to make nuclear plants safer and more efficient in future, but until their value is recognised and more work is done on their design and construction their full potential is unlikely to be realised.

References

Bodansky, D. (2004) *Nuclear Energy: Principles, Practices and Prospects*. New York: Springer.

Hoyle, F. (1979) *Energy or Extinction?* London: Heinemann.

Lillington, J.N. (2004) *The Future of Nuclear Power*. Oxford: Elsevier.

Mathew, S. (2006) *Wind Energy: Fundamentals, Resource Analysis and Economics*. Berlin: Springer.

Murray, L.R. (2009) *Nuclear Energy. An Introduction to the Concepts, System and Application of the Nuclear Process*. Oxford: Butterworth.

Olah, A.G., Goepfert, A., Parakash, S. (2006) *Beyond Oil and Gas: The Methanol Economy*. Weinheim: Wiley.

Sterrett, T. (1994) *The Energy Dilemma*. London: Multivox.

3 Revision

■ Look back at the text and find examples of the following features:

- (a) Background information
- (b) A purpose statement
- (c) An outline
- (d) A definition
- (e) A generalisation
- (f) The use of brackets to give extra detail
- (g) A passive structure
- (h) A phrase showing cause and effect
- (i) A synonym for 'energy'
- (j) An example of tentative or cautious language
- (k) An example to support the writer's argument
- (l) A counter-argument
- (m) A citation
- (n) A synopsis

NB. Formatting of written assignments

Some departments may expect essays to be written in the style illustrated above, with numbered sections and headings, while others may require essays to be written without these. It is important to check with your teachers what the preferred style is.