



The Open  
University

# TM356/SEP

## Specimen Examination Paper

### INTERACTION DESIGN AND THE USER EXPERIENCE

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Time allowed: 3 hours

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There are **TWO** parts to this paper and you should attempt **BOTH** parts.

**Part 1** Attempt **ALL** questions in Part 1.

Part 1 carries 60% of the total examination marks.

**Part 2** You should attempt **ONE** question from Part 2.

Part 2 carries 40% of the total examination marks.

**Note that, although this specimen paper gives you a choice of questions for Part 2, this will not be the case for the actual examination. We have given you two examples in this specimen in order to help you prepare.**

#### At the end of the examination

Check that you have written your personal identifier and examination number on each answer book used. **Failure to do so will mean that your work cannot be identified.**

Put all your used answer books together with your signed desk record on top. Fasten them in the top-left corner with the round paper fastener. Attach this question paper to the back of the answer books with the flat paper clip.

## PART 1

*Answer all of the questions in this part.*

### Question 1

Describe **two** benefits of good interaction design and **two** problems that derive from poor interaction design.

*(4 marks)*

### Question 2

Name **two** interaction design principles. **For each principle**, explain how it contributes to achieving good interaction design.

*(4 marks)*

### Question 3

The interaction design process has three key characteristics. Name **two** of these key characteristics, and **for each** characteristic, explain why it is important.

*(4 marks)*

### Question 4

Scenarios and personas are often used during the design process. Briefly explain:

- (a) the difference between scenarios and personas in terms of the information that each represents
- (b) **two** different ways in which scenarios can be used during the design process.

*(4 marks)*

### Question 5

Imagine you are designing a navigation system for boats, to help sailors find the best and safest sea routes to get to destinations they want to reach. Give **two** examples of questions you would ask about the physical environment in which the navigation system might be used, in order to establish requirements for the system. **For each** question, explain how the answer might inform the requirements.

*(4 marks)*

### Question 6

Thinking of data gathering methods, explain when it is more appropriate to use *focus groups* and when it is more appropriate to use *interviews*. In **each case**, justify your answer providing specific examples.

*(4 marks)*

### Question 7

**For each** of the **two** data gathering approaches *observing users* and *asking users*, provide one advantage and one disadvantage.

*(4 marks)*

- Question 8** There are many benefits to reflecting on the *conceptual model* for an interactive product as part of the design process. Briefly explain:
- (a) the difference between the conceptual model and the interface of an interactive system
  - (b) two reasons why it is useful to make a distinction between conceptual model and interface.

(4 marks)

- Question 9** Cognitive processes – such as memory, focus and attention – are accounted for in different ways in different interface types. Choose **two** of these processes and briefly explain how **each one** can be accounted for in a design based on the following interface types respectively:

- (a) screen-based graphical interface
- (b) haptic interface.

(4 marks)

- Question 10** In the age of ubiquitous computing, it is more appropriate to talk about 'perceivability' rather than 'visibility'. Explain why this is the case, providing an example of an interface that illustrates this.

(4 marks)

- Question 11** A distinction can be made between *low-fidelity* and *high-fidelity* prototypes. Thinking of a **low-** and **high-** fidelity prototype **respectively**:

- (a) Briefly describe an example of such a prototype.
- (b) Briefly explain when it would be useful to use such a prototype.

(4 marks)

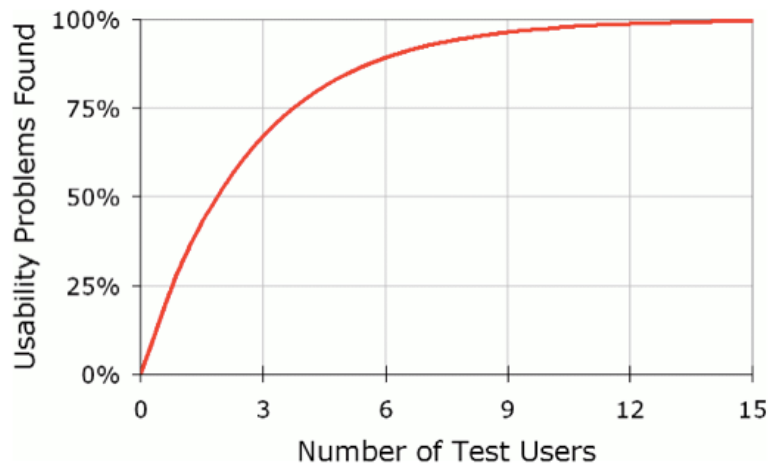
- Question 12** The module discusses three main evaluation approaches: usability testing, field studies and analytical. Fill in the **four** gaps in the following table.

Evaluation approach	Usability testing	Field studies	Analytical
Location	Laboratory	Natural settings	Anywhere
Role of users	1.	2.	Users not generally involved
Main type of data (qualitative or quantitative)	3.	4.	Could be qualitative (list of problems) or quantitative (number of problems)

(4 marks)

**Question 13** You want to evaluate a new app to help tourists find their way around in a foreign city. Explain **two** aspects of the app which you may want to evaluate. **For each** aspect describe **one** method you could use for your evaluation. (4 marks)

**Question 14** The graph below from the Nielsen Norman group summarises findings about usability and user experience evaluation of interactive systems.



Describe **two** findings from the work of the Nielsen Norman group to which the graph refers. **For each** finding, describe one insight that can be derived in relation to conducting evaluations.

(4 marks)

**Question 15** Identify **two** different forms of presentation of quantitative data gathered during an evaluation. **For each** form of presentation, explain when it might be more useful.

(4 marks)

**Note that, although this specimen paper gives you a choice of questions for Part 2, this will not be the case for the actual examination. We have given you two examples in this specimen in order to help you prepare.**

## **PART 2**

*You should attempt **ONE** question from Part 2.  
Part 2 carries 40% of the total examination marks.*

### **Question 16**

There is a general concern that people are spending too much time seated at their desks and that this is leading to a range of health problems. You have just joined a company that takes the health and well-being of its staff seriously. An initiative is launched to encourage staff to think creatively about ways to improve their health.

You and some of your colleagues decide to use your expertise in interaction design to investigate how technologies can help people focus on improving their posture. You discuss your ideas with the occupational health team at the company, who explain that the main thing to get across to people is to adjust their posture regularly, go for a walk or do some simple stretching exercises at regular intervals.

Answer all of the following questions. In your answers, be specific to the workplace setting of this company and the issue of posture problems. Answers that do not relate to this context will get no marks.

#### **(a) (TOTAL 8 marks)**

You decide to put together a small questionnaire to be sent out to staff in order to better understand the requirements for a technology enabled solution for improving posture. The questionnaire has the following questions:

- Do you have problems with your back or posture? yes/no
- Do you get up regularly from your desk to stretch or walk? yes/no
- Do you think you could benefit from something to remind you to take a break? yes/no

- (i) Identify two circumstances when it may be beneficial to use questionnaires to gather data in this context.
- (ii) Is the format of the questions in the questionnaire above useful? Justify your answer.
- (iii) Apart from the questionnaire, identify two groups of people you could interview to gather insights that could help you identify the requirements. For each group, briefly describe what information you expect to obtain by interviewing them.

**(b) (TOTAL 6 marks)**

From the results of your initial data gathering, you decide that a persona would be a useful step in working towards the design. One of your colleagues writes the following:

<b>John Smith</b>	<b>Works in the IT department</b>
37–44 years old	Does not get up from his desk regularly
	Suffers from backache and headaches
	Would like something to remind him to get up more often

Give three limitations of the above persona. For each limitation make one suggestion on how the persona could be improved.

**(c) (TOTAL 6 marks)**

The occupational health team suggests that a software tool is available that could be installed on the computers of all the people in the company. This tool automatically sends everyone a reminder to get up and do some exercise.

You and your colleagues want something that is more personalised and flexible, and that uses forms of embodied interaction that are more subtle. You formulate the conceptual design for an interactive product that you feel would be more useful.

Provide this conceptual design under the following three headings:

- the main concept that underlies the interactive product you envisage
- the type of behaviour or activities that the product is expected to promote or support
- important aspects of the user experience.

**(d) (TOTAL 8 marks)**

To implement your conceptual design, you are reflecting on the use of three different interface types to monitor and alert the user about their posture and movements. These are:

- a chair with inbuilt sensors
  - a belt worn by the user
  - a lamp that sits on the user's desk.
- (i) Explain how a Wizard of Oz technique might be used in the process of prototyping the chair design.
- (ii) Give an example of a sensor that could be used to develop the interactive belt, and explain the type of information that can be gained from it.
- (iii) For each of the design ideas above (chair, belt and lamp), explain in what way they express ideas of embodied cognition.

**(e) (TOTAL 12 marks)**

Assume that the first functioning prototype chair has been developed that can detect a person's posture. The chair also provides haptic feedback in the form of a subtle vibration effect when the person has not moved for some time.

- (i) Briefly discuss, providing reasons, whether an opportunistic evaluation would be appropriate at this point.
- (ii) At a later stage, once the initial prototype chair has evolved, you decide that both a lab-based evaluation and an in-the-wild study are appropriate to investigate different aspects of the prototype. For each study identify and justify:
- an evaluation question specific to the study
  - a particular type of prospective user to involve in the evaluation
  - an activity they would need to perform.

*Note: for the different studies provide different answers.*

- (iii) You have gathered a substantial amount of qualitative data from your evaluations. Briefly describe three approaches to analyse this data.

**Question 17**

Rochesters is a supermarket with large and smaller stores all over the country, but also with a large online ordering presence. From the analysis of their sales figures, the Rochester management team have noticed that online shopping has stagnated somewhat – that is, few new online customers are joining and the volume of online purchases by existing customers also seems not to be growing. They have decided to review the online business to understand how to increase sales.

You are part of a team that has been tasked with evaluating and potentially redesigning the online shopping experience for customers. In particular, Rochesters want to have a better understanding of how current customers are using the online services, and whether additional features should be designed to boost figures, increase interest and potentially attract additional customers.

A preliminary report from a marketing consultant has indicated that the users unhappy with the existing online shopping experience fall broadly into two groups as follows:

- *Older people*, who are typically retired. These users are relatively time-rich, but find it difficult to go physically to the supermarket due to various mobility issues and therefore rely on online services for their basic weekly shopping. However, they are also more likely to have accessibility constraints such as restricted eyesight and limited manual dexterity, which means that they are not finding the current online shopping service helpful.
- *Young professionals*, who typically work long hours. These users are relatively time-poor and therefore generally do not have time to go to the supermarket. These young users are not very confident about their catering skills but enjoy entertaining socially and are keen to be able to provide highly creative and sophisticated meals, including exotic delicatessen items, to impress their friends and colleagues.

Answer all of the following questions. In your answers, be specific to the physical and virtual supermarket, and to the issues related to the shopping experience. Answers that do not relate to this context will get no marks.



**(a) (TOTAL 4 marks)**

Identify one usability goal and one experience goal the new website could meet to benefit the group of *older users*. Explain why each of these goals are important for this particular group. The goals must refer specifically to the characteristics of the user group and the Rochester project.

**(b) (TOTAL 10 marks)**

You decide to use direct observation to elicit requirements from older people for the new Rochester online shopping service:

- (i) Describe one place where you would carry out the observation and what you would observe. Justify your choices.
- (ii) Describe two limitations of using direct observation in this particular case given your choice of location.
- (iii) You want to use one additional method to complement direct observation. Identify two candidate methods and, for each method, describe how it would complement direct observation in this particular case.

**(c) (TOTAL 8 marks)**

You are thinking of developing a range of prototypes to help you design the new web service in a way that meets the requirements of your *older user* group. These include paper-based prototypes such as scenario storyboards and interface storyboards, as well as interface storyboards developed with mock-up tools such as PowerPoint and Balsamiq.

Making reference to the context of developing a web shopping service for older people:

- (i) Describe what type of information scenario storyboards and interface storyboards would respectively allow you to convey.
- (ii) Explain in what way the scenario storyboard and the interface storyboard would respectively be useful in this design context.
- (iii) You want to create interactive mock-ups to investigate which interface design might be more aesthetically pleasing for the web shopping service. Describe in what way PowerPoint and Balsamiq could respectively be useful in this particular context.
- (iv) As a part of creating your interactive mock-ups, you want to design a set of icons that is easy for your users to recognise and understand. Describe one advantage of prototypes developed with pen and paper, and one advantage of prototypes developed with mock-up tools.

**(d) (TOTAL 4 marks)**

You want the new web shopping service to help older people, who might have difficulty remembering what they need to include in their grocery shopping, and you think of basing the interface on some kind of metaphor.

- (i) Suggest a metaphor idea that you could use to help users remember what they need to buy for their groceries, and describe how the metaphor might work.
- (ii) Describe one advantage and one disadvantage of the metaphor you have thought of.

As a result of your requirements elicitation activities with the group of *young professionals*, you have prototyped a smartphone app designed to meet the requirements of this user group for Rochesters' online shopping service. As a priority your app needs to support the following usability goals: efficiency and utility.

**(e) (TOTAL 4 marks)**

You decide to evaluate the goal of efficiency by carrying out a usability test in a usability lab:

- (i) Describe two advantages of this approach.
- (ii) Describe two disadvantages of this approach.

**(f) (TOTAL 2 marks)**

In order to test two different versions of your app, you ask some of your users to complete a task using version A, and some to complete the same task using version B. You find that the group who used version A completed the task significantly faster than the group who used version B. Do these results indicate that version A provides better utility? Justify your answer.

**(g) (TOTAL 8 marks)**

You decide to carry out a different kind of evaluation outside of the usability lab. In particular, describe the following, justifying each of your answers:

- (i) What evaluation method would you use?
- (ii) Whom would you involve?
- (iii) Where would you conduct your evaluation?
- (iv) Give an example of what activity you would ask your participants to carry out.

**(END OF QUESTION PAPER)**