Lesson plan

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| Topic 4 Sourcing and collecting the data |
| Learning Objectives:* Describe:
* primary and secondary sources of data
* Methods of judging and ensuring the reliability of data
* The characteristics and implications of methods of collecting data and opinions including: surveys, questionnaires, focus groups and interviews
* The characteristics and implications of user interfaces for data collection and processing systems, including: ease of use, accessibility, error reduction, intuitiveness, functionality, performance and compatibility
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| Content |
| StarterPowerPoint Guide: Topic 4 Digital devicesThe starter has two different research methods, the first gathers primary data and the other method gathers secondary data. Students should be able to see limitations in both of these. Discuss these and go through the answers slide.MainPrimary and secondary dataStudents need to be aware that primary data is that gathered themselves, whereas secondary data is that gathered from others. Some students may feel that primary data is better quality than secondary data – it would be worth asking them to compare data for UK TV viewing habits from a research company with a sample of 1000 (secondary) with data from a school student and a sample of 30 (primary). In this case, the secondary data will be far more accurate and reliable.Surveys and questionnaires and effective designSurveys collect data for later analysis. Questionnaires are very commonly used as a data collection tool within a survey. Take students through the slide on questionnaires. The types of questions that can be asked are given on the answers slide. Note that closed questions will give quantitative data and open questions are usually used to gain qualitative data. The slide on effective design discusses a number of ways that online questionnaires can be made easier to complete and less overwhelming. Students may be able to add additional ways design features, such as using standard components for boxes and buttons.InterviewsTake students through the slide on interviews. Interviews often have a number of questions that a researcher will ask and then allow the person being interviewed to go deeper into different topics. They are much harder to analyse. One common method of analysis is to code each sentence into categories and then look at all the different occurrences of the same theme. Often interviews can be good for a researcher to ‘get a feel’ of a situation and what is happening and as such they are often used as a qualitative method.Focus groupsFocus groups have increasingly been used to guide new products for companies and also for new policies in government. A video explaining how focus groups work is available here: <https://www.youtube.com/watch?v=3TwgVQIZPsw> [4m46s]. Focus groups and interviews are mainly used to gain qualitative data.Case study: Coca-ColaTake students through the case study. Ask students if in their experience the perception around Diet Coke is accurate or still true today. This may be an opportunity to gather some primary data.Give out **Worksheet 4** and ask students to do **Task 1** and **Task 2**.Topic 4 Worksheet 4Topic 4 Worksheet 4 AnswersLeading questionsThe introduction to the question only gives the positive aspects of social media. The question itself is asked as a simple yes/no question as to whether they should ‘spend more time on social media’. This makes it likely that many people will be swayed to answer ‘Yes’.Reliability of data and Case study: FordA number of factors can make data unreliable and many of these are listed on the slide. Additional factors would include how old the data is and whether it was still relevant. This answer leads into one of the problems that occurred in the case study on the Ford Edsel. Here the company had tried to produce an ideal car, but it was based on ideas and research that was outdated by the time it was launched.Polling and Case study: EU referendumAlthough not specifically mentioned in the specification, polling is a useful technique to gain an answer to one question. The polls shown on the slide show that in the first half of 2019 there was an increase for the Brexit Party and Liberal Democrats, with a smaller increase for the Green Party. All other parties saw significant declines. The case study of the EU referendum illustrates that there is always a margin of error in polls. One aspect of the inaccurate polling was that telephone polls were thought to favour more graduates than the general population. With a high turnout, it is thought that the online polls were more representative for the actual referendum.Give out **Worksheet 4** and ask students to do **Task 3, Task 4** and **Task 5**.Ease of useThere are a number of ways that data collection interfaces can be made easier to use. Ask students to look at the Employees form and suggest ways that it can be improved. In addition to those ways listed on the answers slide, students could also consider the form having additional help next to the fields. This form may not need it, but harder forms certainly do.Error reductionThe slide here discusses why error reduction is important. The answers slide gives both verification and validation as ways in which the number of errors can be reduced. Ways that data can be validated are discussed in more detail in the next topic.AccessibilityData entry systems need to be accessible for the people who use them. This will take into account the capabilities and knowledge of those people. Ask students to contrast systems which are aimed at a sales assistant at a checkout and those that are aimed at customers themselves. In addition to different types of users, care must be made to design data entry systems so that where possible they can be used with people with disabilities.Performance and compatibilityStudents will likely have experienced slow websites or software. Ask them to discuss these situations and also to explain how a slow service made them feel as a user (frustrated, stressed, angry). If online questionnaires are slow to complete, very few people will bother to complete them. Equally data collection forms need to be compatible with the devices that users are using. It is no good designing a website to take online orders for a fast food restaurant, if most users want an app instead. Equally, many users will be frustrated if the app is made for a small screen smartphone and not responsive to a larger tablet device.FunctionalityThe underlying database structure is called a database schema. This must be carefully thought out and designed before the database is built. Developers should anticipate future functionality that may need to be added so that a costly change will not be necessary. Additional functionality such as reports can be added to databases once they have been built.Ask students to do **Task 5** on the worksheet**.**PlenaryAsk students to answer the questions in the plenary task and then go through the answers with them.Hand out **Homework 4**. Topic 4 Homework 4Topic 4 Homework 4 Answers |