

Big data – How does it work and why is it important in my life?

1 Topic

Big data is part of the students' world: The "Loki and her data" explanatory video starring Loki is reinforced with examples from the students' everyday lives. It thus answers and illustrates the question of how people leave behind data tracks that can be used for big-data analyses. This happens, for example, via social networks, location services, or fitness and tracking apps. The result is a tremendous amount of data on a broad range of topics from each and every person. These processes are often invisible. Private companies and scientific institutions then work with the data. Advertising and offers are geared toward these data, or insights that can serve society are gained. In other words, there are diverse types of use and players and thus both positive and negative consequences.

An approach to the positive and the negative consequences of big data that makes sense is a discussion of the pros and cons in class. Loki's experiences and the paths of her data travel should serve as the starting point for the discussion. Should Loki's data be collected, processed, and analyzed? What are the consequences of this? The class will discuss two positions: "the pros of collecting Loki's data" and "the cons of collecting Loki's data".

2 Teaching plan

The discussion of the pros and cons is designed for a double teaching period of 90 minutes.

2.1 Video viewing

Approx. 5 minutes

First, the "Loki and her data" explanatory video is watched by the entire class. Ideally, two (mobile) devices are available afterwards during the group work phase for watching the video again.

2.2 Preparation

Approx. 5 minutes

The class is divided into two groups of approximately the same size. One group is the group in favor (pro), the other is the group against (con). The groups' positions are as follows:

Group in favor = data collection is useful and necessary.

Group against = data collection entails dangers and should be prohibited.

The positions of the groups are assigned.

2.3 Work assignment

Approx. 30 minutes

Now the students in the groups gather arguments for the discussion – each group for its position on the topic. Some students' personal opinions may differ from the one their group represents. They must thus try to understand and empathize with a position that does not match their own. This leads to a change of perspective. The exercise is also used to think about different views.

"Together in your group, think of arguments that support your position. To do so, draw on your knowledge from the video about Loki. You can also do research online. Also think of arguments

that the other group might make so that you can respond to them. Write your arguments on cards so that you have them in front of you during the discussion. Arrange them according to importance so that you can distinguish between strong and weak arguments.”

2.4 Conducting the discussion

Approx. 30 minutes

When both groups have collected their arguments, the discussion begins. The students sit in a circle in two groups facing each other. The teacher moderates and leads the discussion. The group in favor of data collection starts and presents its first argument by having one student from the group state and explain the argument. Then the group against data collection has its turn. It attempts to respond to the argument, to rebut it, and to introduce a new argument into the discussion. Then the group in favor of data collection has a chance to respond. This process continues until the two groups have introduced all of their arguments.

2.5 Reflection

Approx. 20 minutes

When all arguments have been heard, the exercise should turn to the students' own personal opinions. The discussion focuses on the following questions: What is your opinion after the discussion? How do you view the issue as a whole?

3 Important information for teachers

As an aid, the following arguments for the two sides can be introduced into the discussion. They originate from the explanatory video and refer to the same facts, always from two different perspectives.

Fact from the video	Argument in favor	Argument against
Instagram collects and saves not only photo data, but also the photo location, the time, all likes and comments, and even the contacts stored on the telephone.	As a result, Loki is shown posts that she will like. The advertising (called sponsored posts) is also suited and interesting to her. In an app's settings, users can also specify whether the app may access the contacts, camera, and microphone.	A lot of data are saved and forwarded, including data that do not have anything to do with the platform. If access to these data is denied in the app's settings, use of the app is very limited. As a result, in most cases Instagram knows a lot about its users and wants to earn money with advertising placement. For this reason, Instagram also wants Loki to remain on the page as long as possible because then she will see a lot of advertisements.
Loki's location data are saved and analyzed.	Loki receives accurate weather forecasts and storm warnings so that she can bet-	Loki's location data are shared with many companies and institutions in order to

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	ter plan her day.	make accurate predictions. However, it is not entirely clear what else happens with Loki's data, for example, why the data are being stored.
Loki's smartwatch collects fitness data: kilometers walked, number of steps, heart rate, calories burned, and time.	Loki always knows exactly how much she has exercised on a given day and in this way can more easily pay better attention to staying healthy. At the sign of a illness, her smartwatch can prompt her in a timely manner to go to a doctor before she gets really sick. In addition, such collected data can support research in order to gain new insights.	The collected data are very personal and sensitive. This raises the question of whether and how data can remain protected. In addition, other companies receive Loki's data. It is unclear for what purpose these companies use the data. Thus there is the danger of data misuse.