

## TOK Essay

### Topic: Is Replicability Necessary in The Production of Knowledge?

The quest for knowledge is an undying one. From the day that we are born to the day that we die, this quest continues, and we keep striving to learn more to become better versions of ourselves. In this essay, the idea is to explore how crucial replicability is when it comes to the production of knowledge. What exactly is replicability? It is the ability to reproduce methods and procedures for them to yield the same results. So how important is replicability? In most situations, replicability is important to ensure that the results of research are reliable and valid. However, in many cases, it is not always possible or necessary to replicate a study. Let's try and understand this in a lot more detail.

The natural sciences as a subject is such that replicability becomes one of the most parts. Researchers are expected to produce results that are valid and reliable, which means that if the experiment is done again, it should yield the same results. This is very crucial to validate the findings so that very important information can come out of that, which can then be used in the best way again. For the credibility of that knowledge, this is one of the things that is most important. With replicability being possible, we can protect against biases and can also reduce the chances of errors. So this is why replicability becomes even more important.

Let's understand this better with the help of an example. In the sciences, the concept of plant growth is one that is taught to students from a very young age. Students are taught how there are many different factors that affect plant growth, including the sunlight they get, the water they are given, the soil they are sown in, and so on. So now let's say person A conducts an experiment where she wants to prove that the soil quality has a massive effect on the plant growth. She takes the same seeds and puts both of them in two different pots. She gives them the same amount of sunlight and the same water. The only thing that is different for both of them is the soil quality. One of them is planted in very high-quality soil that is nutrient dense. The other is planted in very low-quality soil that barely has what the plant needs to grow (Anil & Shivay, 2021). After a few days, the experiment results show that the plant that got a better quality soil grew much stronger and healthier, whereas the other one has stunted growth. This thereby confirmed that high-quality soil is essential to solid plant growth. Now if person B replicates the same experiment and comes up with the same findings, then this further validates the research, confirming that high-quality soil is essential to healthy plant growth. So we can see how and why this happens and what it eventually leads to. So this is why replication is important in the natural sciences. Given that the subject is highly evidence-based, replication is important for the validity and the authenticity that the results have. The way of knowing that I used here was reasoning. Through reasoning and a thoughtful procedure, I was able to talk about how and why different factors affect plant growth and why it is important for the same results to come about if the conditions are kept the same.

Now that we have established how and why replicability is important in the natural sciences, it is also imperative to shed light on how there are several challenges that we can face when

it comes to replication (Lewandowsky & Oberauer, 2020). Some of these challenges include funding problems, experimental conditions, and even the complexity of certain phenomena. If researchers do not have the resources that they need, then they cannot conduct the same experiment in the way that they would have otherwise liked to. When dealing with intricate systems of rare events, replication becomes a bit hard. However, it is important that we address replicability challenges if we want to work our way through things well. If replication challenges are catered to in a much better way, then robust conclusions can be reached. Not just that, but it also leads to a better understanding of the results of the experiment. Furthermore, transparent reporting is also very important if you want people to understand the importance of what is happening and if you want open discussions about things in the scientific community. So from here, we can see that while replication challenges do exist, it is important to understand how and why we replicate things and why it becomes all the more important for the natural sciences as a subject.

Now let's move on to another area of knowledge. When we talk about history, we can see that the nature of the subject is very different. History as a subject is one where we have subjective judgments. The methods that we use for historical research are also very different, which again means that replication is not as straightforward in history as it would be in the natural sciences. Before we delve into specific examples, let's understand how replication happens in history. The one major way that replication happens in this area of knowledge is through cross-referencing sources. People, when researching, use many different sources of information. They rely on primary and secondary sources when trying to find out more about things. The main idea behind this is to confirm facts from different sources to just be sure about their authenticity. Apart from that, comparative analysis can also be done. This way, when similar events are studied, it leads to different patterns, and that way, a comprehensive understanding of history becomes possible.

Now let's study this with the help of an example. Say if a historian decides to study the division of the subcontinent and he makes use of different textbooks to do so and forms an opinion on it, then he can find out in detail what happened and can also conduct his own analysis on this. But what is very important to note here is that these textbooks and the information that they give depend entirely on what context they are written in. Say if this person finds out about this from a textbook that has a British context, then he is more likely to be inclined toward their point of view as opposed to knowing more about the oppression that the Indians had to face at their hands.

On the other hand, if another person decides to conduct the same research and he chooses to go for eyewitness accounts and textbooks that are written by Indian nationals, then the chances that they will come up with the same analysis are very different. This is mainly because the viewpoints that these are written from will then be very different. So from here, we can see why this matters and how replicability is very different when it comes to a subject like history. History is mainly all about the ways that people choose to interpret things. No two people can come to the same conclusion when they have different points of view and different views about things (Peels, 2019). The way of knowing that I used to come to this conclusion is sense perception. I myself have read my different accounts of history, and all of these tend to hint toward different things, highly dependent on where they are

coming from and what the origins of the writer are like. So this is something that really needs to be paid attention to when we try to understand something like this.

On the other hand, it is also important to note that replicability in history does not remain as relevant, with the main reason being that the nature of the subject is such that doing something like this would mean coming up with the exact same research. This becomes very hard when we consider the fact that sometimes, there is very little access to resources. Due to limited availability of resources, it becomes very hard to actually see where the information is coming from. So replication becomes very hard in this context. Apart from that, the ways that people choose to interpret information largely depend on where they are coming from and how their personal opinions come into play as well. So when all of this is taken into account, it becomes easier to put into perspective why this is a huge challenge. Apart from that, contextual complexity also pretty much exists. So when we talk about the context in which research was done, there are many factors that play a part in it. So with some areas of knowledge, it becomes very difficult to actually replicate and come up with the same type of results and findings. So this is why we need to be very careful when we choose something like this.

So, on the whole, we can see that natural sciences and history are very different in nature as subjects. So while replicability is very much possible and important in the natural sciences, it is not always possible to replicate in history due to the myriad of possibilities that exist in this domain. The natural sciences are more objective in nature, and history is more subjective, where many different factors play a part.

## References

Anil, A. & Shivay, Y., 2021. Soil Health and Its Improvement Through Novel Agronomic and Innovative Approaches. *Frontiers*.

Lewandowsky, S. & Oberauer, K., 2020. Low replicability can support robust and efficient science. *Nature Communications* .

Peels, R., 2019. Replicability and replication in the humanities. *Research Integrity and Peer Review* volume .