

Knowledge

Epistemology

Epistemology is an area of philosophy studying the theory of **knowledge and justified belief**. Epistemology is concerned with questions like:¹⁾

- *What is knowledge?*
- *What are the necessary and sufficient conditions of knowledge?*
- *What are its sources?*
- *What is its structure, and what are its limits?*
- *What is the value of knowledge?*²⁾

Epistemology has been primarily concerned with declarative or *propositional* knowledge, and not with other forms of knowledge like procedural or *ability* knowledge.³⁾

So what is knowledge?

When talking about knowledge or that someone knows something, usually this knowledge has two necessary and sufficient requirements:⁴⁾

- **truth**, and
- **belief**.

This means that in order to consider something an element of our knowledge, it has to **be truth** and its "owner" must **believe in it**. If we would omit the first condition, for example, if a friend of yours told you that $2+2$ equals 5, you probably wouldn't consider this to be a representation of a *different* knowledge. You would say that he is *wrong* or that he *does not know* to perform the operation of addition of 2 and 2, although he believes he does. Alternatively, if a friend of yours told you he knew an answer to a quiz question but still suggested another answer or no answer at all when prompted, you still probably wouldn't believe that he really knew the right answer.⁵⁾

A third condition is in some literature added to the two above:⁶⁾

- **justification**.

Unless the correctness of the knowledge and the belief is somehow justified, it might just be a matter of luck.

These three prerequisites form one of the various definitions of knowledge.

- **Knowledge is a justified, true belief.**⁷⁾

Still, when speaking strictly in context of epistemology, defining knowledge is difficult due to the **problem of the criterion**:

- *"Suppose we begin the task of defining knowledge by pointing to cases in which we have knowledge and trying to identify what is common to each case. The problem with this*

suggestion is that it assumes that we can already identify cases of knowledge, and thus that we already know what the marks, or criteria, of knowledge are. Alternatively, we might begin the task of defining knowledge by simply reflecting on the nature of knowledge and determine its essence that way. That is, through reflection we might determine what the criteria for knowledge are. The problem with this suggestion, however, is that it is difficult to see how we could possibly identify the criteria for knowledge without first being able to identify particular cases of knowledge. It seems, then, that either one must assume that one has (at least some of) the knowledge that one thinks one has, or else one must assume that one knows, independently of considering any particular instance of knowledge, what the criteria for knowledge are. Neither assumption is particularly plausible.”⁸⁾

Another criticism of the *justified-true-belief* view of knowledge was written by [Edmund Gettier](#)⁹⁾ demonstrating how even a justified true belief can be a matter of luck or circumstances and not knowledge (for example someone forming a true justified belief about what time it is by looking at clock that doesn't work any more but just happens to be showing the right time).¹⁰⁾

The concept of knowledge is subjected to a number of other issues like:¹¹⁾

- [Agripa's trilemma](#) (what is what justifies our knowledge or beliefs)
- the problem of perceptual knowledge (are our senses trustworthy?),
- the problem of testimonial knowledge (knowledge that we gain as a testimony from others),
- the problem of memorial knowledge (is our memory system trustworthy?),
- ...

Working definition of knowledge

Not to elaborate further on epistemological dilemmas and to return to the area of assessment, e-assessment and potential of computers in assessment, we will now set a more practical definition of knowledge in context of mentioned topic starting from the **justified, true belief** definition.

Firstly, we replace the term **true** with **correct** in the given definition, as suggested by other authors¹²⁾, to avoid the philosophical connotations of its meaning.¹³⁾

The second change we introduce to the starting definition, also suggested by other authors¹⁴⁾, is to replace **justified** with **certain** (although others suggest only adding *certainty*¹⁵⁾). We suggest that certainty comes as the result of the strength of justification one can present to himself. Still, the problem with *certainty* is similar to the one with *justification*:

- *“Knowledge connotes certainty (but) what shall we count as certain? ... one would hesitate to limit knowledge to the absolutely certain... We do better to accept the word 'know'... as a matter of degree. It applies only to true beliefs, and only to pretty firm ones, but just how firm or certain they have to be is a question similar to how big something has to be to qualify as big.”¹⁶⁾*

This leads us to our definition of knowledge we will use in context of knowledge assessments and e-assessments: knowledge is a

- **correct belief associated with a strong feeling of certainty** (which is the result of justification).

Another important concept to be introduced here is the *usable* knowledge, which

- *“means that a person is sufficiently sure of the correctness of the knowledge or belief so it will be used to make decisions, to solve problems and to select and execute actions.”¹⁷⁾*

The relationship between correctness, certainty and usability of a belief

Criterion of knowledge:			
Malaria is a disease caused by a parasite.			
Incorrect/correct belief:			
Student's belief that malaria is a disease caused by bacterial or viral infection.		Student's belief that malaria is a disease caused by a parasite.	
Certainty:			
Certain of correctness	Uncertain of correctness		Certain of correctness
Usability:			
Usable belief	Unusable belief		Usable belief
Student knowledge state:			
Misinformed	Uninformed	Partly informed	Well informed

Adapted from ¹⁸⁾. The table can be read top-down or bottom up.

For example, a well informed student has a correct belief that malaria is caused by a parasite. He is certain of this fact since, he remembers he read it in a book or heard it from the teacher. His certainty is making this belief usable meaning he will choose that answer if questioned or will calm antibiotics have no effects on treating malaria.

An uninformed student, on the other hand is uncertain on what is causing malaria and has therefore unusable belief. His uncertainty may therefore result in giving a false answer, the right answer if he is lucky, or prevent him from dealing with more complex problems involving this information.

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Last update: **2023/06/19 15:49**

