



How we know vs. what we know

Learning Goal: I can distinguish between first and second-order knowledge



Starter

What's the difference between the reflection in your learning journal, and what you study during daily lessons?

Clue - consider the lesson title.

First Order Questions



First-order questions are about knowledge.

First-order questions are about absolute and concrete matters. (e.g. what should we do?)

WHAT do you know?

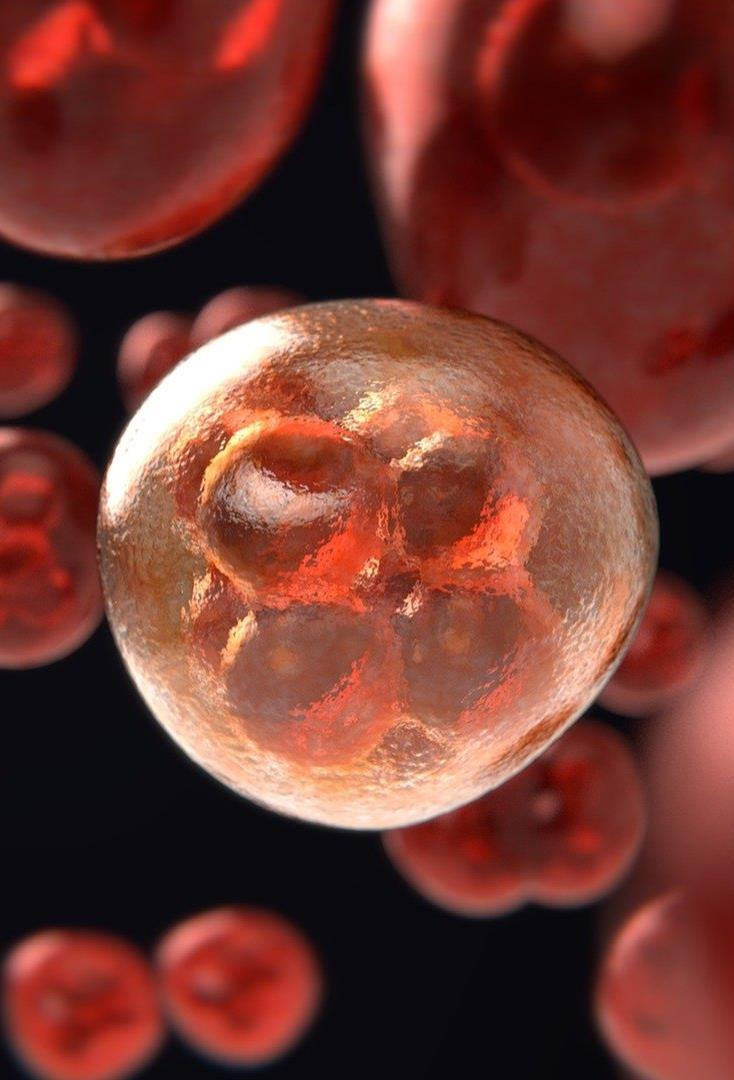
Second Order Questions



Second-order questions are about abstract matters (e.g. why should we do it?).

Second-order questions are questions about first-order questions and their answers.

HOW do you know?



Here are some questions related red blood cells. Which of them are about **what** we know in science, and which ones are about **how** we know in science?

1. What are T-Cells?
2. What role does chance play in making discoveries?
3. How does the body fight cancer?
4. What treatments are used to treat cancer?
5. Why and how does knowledge change over time?

The social issue we explored was the limited accessibility of spacecraft. In the Star Wars unit, we redesigned the Millennium Falcon to allow for different passenger types. We changed labelling to include pictures for ELL learners, or even intergalactic aliens. As well, by increasing the contrast between the wall colours and writing, we helped low-vision passengers.

Great. Now let's
add some
analysis.

So, what's a 2nd
order question
you can apply?

What is the most
important aspect
of social justice?

The social issue we explored was the limited accessibility of spacecraft. In the Star Wars unit, we redesigned the Millennium Falcon to allow for different passenger types. We changed labelling to include pictures for ELL learners, or even intergalactic aliens. As well, by increasing the contrast between the wall colours and writing, we helped low-vision passengers. **This made us realize that a fundamental aspect of social justice is creating spaces that allow diversity.** To do this, you should design spaces using the widest variety of users that you can brainstorm. This practice may have hidden benefits for groups that you didn't even consider. For example, our wheelchair lift also helped everyone from people with canes, to people who have heavy loads of supplies, to baby Yoda strollers, to BB8 droids, to non-humans with different appendages.

– 161 words

What is the key to being a good hero?

Can ideas ever be produced in isolation?

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A hero's success is dependent on their creativity.

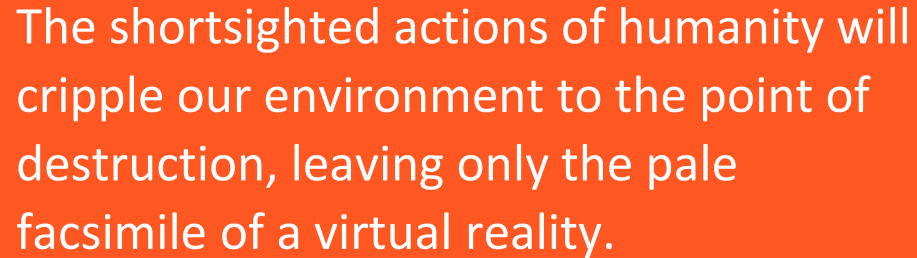
A hero's success depends on the quality of their journey.

Great ideas can never be produced in isolation because multiple perspectives are critical to problem solving.

A hero's success is dependent on the relationships they build.

How can a study of the future help us to make sense of events in society?

How can a study of the future help us to make sense of events in society?



The shortsighted actions of humanity will cripple our environment to the point of destruction, leaving only the pale facsimile of a virtual reality.

To what extent can our virtual selves represent our real selves?

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Within the virtual world, our avatar can never be more than a reflection of our worst self.

Within the virtual world, our avatar can never be more than a reflection of our best self.

Masks are wonderfully paradoxical in this way: while they may hide the physical reality, they can show us how a person wants to be seen. - Joanna Scott

To what extent can recreations
replace the original objects?

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replace the original objects?

Virtual reality pales
in comparison to the
world.

The medium is the
message: OASIS teaches its
users that the real world
isn't worth living.

What is the relation between theory and practice?

Is concrete knowledge better than theoretical knowledge?

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The ability to implement theoretical knowledge in the real world is a powerful weapon.

Is concrete knowledge better than theoretical knowledge?

Knowledge is information and wisdom is the application of it

Do you agree that in the internet age knowing where to find the answers is more important than knowing the answers?

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Knowing is not
knowledge; knowledge
is understanding.

Anyone can find answers;
but not everyone can
understand them well
enough to use them



Review

First-order knowledge is **directly** about the world. It has a **narrow** scope, related to a **specific** aspect of an area of knowledge. First-order knowledge questions generally (but not always!) ask, ‘**What** do we know...?’ They are more descriptive and factual.

Second-order knowledge is about the **process of finding out** about the world. It has a **broad** scope, related to one or more **entire** areas of knowledge. Second-order knowledge questions generally (but not always!) ask, ‘**How** do we know...?’ They are more analytical and debatable.

Your **subjects** are mostly concerned with first-order knowledge. **Higher order analysis** can be gained using second-order knowledge.