# Unit 1: Discussion on Knowledge and Truth

**Subject:** Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Steve MacKenzie **Date:** January 5, 2011 6:09 PM

I fell on the side of relativism by 12 points. “Truth” is relative. This caught me off guard but yes I believe it is. I teach Math and Physics and I have a Chemistry minor as well. The more I learned about science, the more I learned how truly objective it really was. For example, Newtonian physics in high school is now believed by scientists to be an estimation of gravity and not what gravity actually is, yet it is still taught today as truth. Another example is Electrons in science, younger grades are taught they are orbiting planets, by Grade 12 they learn that they are electron clouds when in reality they are one dimensional string, and who knows what the theory could be 10 years from now. It is my experience that scientific knowledge is not necessarily more valid than other types of knowledge. In this context, I do believe Truth is relative.

I scored +7 on the Deductivism side confiming my previous belief that Science is a mixture of interrogation of nature and gentle revealing of nature’s secrets. I believe that the secrets of science must be attacked with both methods. In science, inductive scientific process of step by logical step can only take you so far, the true breakthroughs in science are often deductive leaps beyond that indeductive path (intuition). True knowledge can only be gained through intuition and reason together.

With a score of 0 between Contextualism and Decontextualism this study would have me believing that I am conflicted. I assumed that I would lean towards Decontextualism because I thought that science was independent of location and sociological structure. However, comparing this belief with my belief in relativism, why wouldn’t truth be influenced by culture and location and relative in that construct. If truth is more a sign of the times and culture is the times, then it makes sense that I would be more a fan of contextualism than decontextualism (that surprised me). Once again knowledge and truth are relative.

When I think of school or science, I don’t always remember the facts. What I took away from school was the process. I developed a keen sense of observation and deduction that serves me today, so it didn’t surprise me that I fell on the Process side by +6 points. However, based on this score, I also put weight behind learning the ‘body of knowledge’ of science. The body of knowledge is like the pen and pencil and we just use them to create within the process of science. Truth and knowledge are relative and can change over time and culture, but process of deduction and induction stay the same. For example, a friend of mine lent me their grandmother’s chemistry lab book and I noticed that it contained the extact same processes in 1938 as we use today. In fact, you could have interchanged the books and no one would know that it had been written 73 years ago. Truth and knowledge are relative but process endures.

After spending much time rereading Instrumentalism vs Realism, I finally was able to make sense of the wording, whew. It was not a shock that I have an instrumentalist view as it implies that scientific theories are an estimation of the world around us and not necessarily an inalienable truth. There are countless examples of where the estimation works good enough for the teaching process and offers an easier path for students to follow and thus is adopted to later be corrected at a future date. We want students to grasp concepts even if we have to simplify them or change their very nature. Truth and Knowledge are relative.

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Karen Jones **Date:** January 6, 2011 5:08 PM

Hi Steve,

Your analysis hit on many truths with me, but your statement, "There are countless examples of where the estimation works good enough for the teaching process and offers an easier path for students to follow and thus is adopted to later be corrected at a future date" is what stands out the most. Before I became a classroom teacher I'm sure I would have argued on the side of an "absolute" collection of scientific truths, with that the most accurate being the latest research. However, it is an interesting and practical approach to teach many scientific concepts through a historical process where we as teachers draw on, but don't overtly instruct the history of science in order to offer reasonable explanations.

Thanks,
KJ

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Steve MacKenzie **Date:** January 7, 2011 2:15 PM

Hi KJ,

I agree, most of the simplistic models used in the classroom often are historical beliefs ('truths') that have later evolved. Sometimes we have to study the 'truth' in its infancy (often less complicated form) before we can learn the 'truth' more completely. Knowledge builds on knowledge. But do we ever learn the complete truth? Are we doomed to get infinitely closer to the real truth, but never reach it. Or are we even getting closer to the truth or do we just perceive it as closer. Look at the theory of gravity. Newton's approximation came so close to predicting the behaviour of gravity that it was perceived to be true by endless scholars, mathematicians, physicists and others since 1687. It wasn't until Einstein that they realized that Newton's theory is at best an eerily accurate approximation and not the 'truth' about gravity at all. Something to think about.

Steve

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Jasmeet Virk **Date:** January 7, 2011 8:54 PM

Hi Steve,
I am so confused - so Newton's theory was true till Einstein refuted it - but then Newton's theory was still a result of scientific study - not a result of socio-cultural influences. It was what it was -based on the knowledge available at that time. Just like when the world was suppose to be flat- that was based on limited evidence and available knowledge. When truth changes, does it mean that it was less scientific before? I guess what I am trying to say is that even if scientific truth changes with more knowledge, it is is not contextual or relative.
Jasmeet

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Steve MacKenzie **Date:** January 8, 2011 11:31 AM

Hi Jasmeet,

Thanks for the email, it has made me look even further into my thoughts. I think we agree, but maybe we are stating it differently or looking at the same thing from different angles. What do you think of the following?

I believe it is the body of knowledge and the will to explore it that is influenced by society and times, not the process. Einstein's theory of relativity was published in 1905 and didn't start to make an impact until 1930. It is generally viewed that this occurred because the theory had little applicability prior to 1930. Does this not reflect societies interest in only what is useful or applicable? If a super computer where given the knowledge of relativity, I believe it would have immediately continued compiling, studying and growing the theory while looking for ways to prove and apply the principles. Therefore, I believe society influences the areas of study and focus not the process of study. Newton's theory was valid in its time and based on sound process built on prior knowledge. However, it is no longer considered to be the truth and a new truth has emerged. This leads me to believe that knowledge and truth are relative. That does not mean that the body of knowledge is flawed, but rather influenced by societies wants, needs, beliefs. Today, gravity is studied based on Einstein's theory, maybe tomorrow it will be something else.

Steve

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Jasmeet Virk **Date:** January 8, 2011 12:18 PM

Hi Steve,
I get it and I don't ...
This is what your answer led me to...

So even though Einstein's theory was published in 1905 it was not applicable till 1930. I like the word applicable here: it is very constructivist :) - information has to be relevant and meaningful to become knowledge - we could not relate to Einstein's theory - connect it to prior knowledge- so ignored it. But because we could not make this knowledge relevant and subjective does not deny it's existence - that it is the (new) truth. So truth is always out there- we haven't figures it out yet.
So then I agree when you said- knowledge is influenced by society. I also think that process is influenced. Process is how we assimilate knowledge - what processes works for me might not work for you - I am thinking learning styles and modalities here.So can knowledge and process be separated?
So are we back to square one or have we made some progress? May be I am being too linear in my thinking.

Jasmeet

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Steve MacKenzie **Date:** January 8, 2011 2:26 PM

Hi Jasmeet,

AHHHHHH, language….words can mean so many different things to different people. I think we may be thinking different things when we refer to process.

The journey may be different but to reach a logical conclusion the process must be the same. For example, when I am writing a proof for Mathematics, my proof may be 21 pages and take the long path to the proof, but another person may do it in 1 page. The process of applying mathematical principles is universal, anyone could follow our logic, find it sound and agree that we both came to the same logical conclusion but in different ways. Both are very valid ways where no mistakes were made, but different in method.

The process of learning by students, sometimes involves simplification in order to grasp concepts and apply them. We give students complex information and ask them to make sense of it. If we were to teach students that electrons are one dimensional strings, they would be very confused. They would struggle with relating it to anything they know. The concept of electrons being orbiting planets makes the information relatable, but based in logic. It is a logical model to explain electron bonding. Do scientists take the information they receive from scientific process and construct a relatable model? Yes. But the process, the way they gather and interpret scientific data, should be logical and universal. Scientists around the world are able to communicate and share because of the universal nature of scientific process. Scientific ‘truths’ are accepted world wide because process is the same.

In regards to applying constructivism, relating new knowledge to prior knowledge needs to make enough logical sense for a student to be able to build on the understanding of that knowledge. If a

student is misinterpretating a concept, it will be difficult for a student to apply and build on this knowledge. Our pathways to understanding and knowledge might be different but they must be based in logic or it will ultimately fail as we try to apply it to more difficult problems or situations. As a facilitator, I allow a student to find their own path but the path has to be built on solid principles of logic.

In mathematics, we teach student algorithms without teaching them how they work so when they get into more complicated courses they have difficulty applying them to complicated problems. This is a classic dilemma that math teachers face and the very reason why we are looking to revamp math in the classroom.

I believe all scientific inductive process is logical and can be followed and understood by any culture of any time (given the same body of knowledge).

Steve

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Jasmeet Virk **Date:** January 8, 2011 3:25 PM

Thanks Steve,
This, I totally understand this and agree to it :)
Great explanation.
Jasmeet

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Karen Jones **Date:** January 8, 2011 12:51 PM

Hi Steve,

Your discussion with Rebecca, as well as your response started me thinking about the idea of truth in more depth.

First of all, is there only one type of truth? I realize the emphasis in this discussion is the scientific nature of truth; are there such thing as absolute truths? In science we can prove something to be true, but only within set parameters. Are there situations where we can test what we believe to be true in all contexts, and be certain that the truth holds across all possible instances?

Is scientific truth then a case of accurate knowledge? Does truth exist separate from cognitive recognition? Is it analogous to the "if a tree falls in a forest and there's no one to hear it, does it make a sound" scenario?

I believe that there are various types of truth that span the physical to the philosophical, but am not sure about the answers to the questions I posed above. Any thoughts?

Just the ramblings of an post-run, endorphin-fueled madwoman ;-D
KJ

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Rebecca Jacobson **Date:** January 7, 2011 7:54 AM

Hi Steve,

Looks like we disagree. I scored high on the realism side and agree with this finding. In other words, I believe that truth is fixed and objective. It cannot be altered (although it can be interpreted in countless ways and that, of course, is subjective). No matter who we are, when or where we live, truth is truth...we just rarely see it clearly...

Knowledge, on the other hand, is a different story. In fact, I don't see how the two are really linked. If we're lucky, I suppose, we'll pick up knowledge that happens to correspond with truth but we're just a likely to miss the mark altogether.

What a subject...my head hurts!

:-)

Rebecca

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Steve MacKenzie **Date:** January 7, 2011 12:47 PM

Hi Rebecca,

I appreciate the insight. I agree that truth can be interpreted in countless ways and is therefore subjective but I would like to believe that it is fixed and objective. My dilemma in believing that it is fixed is my inability to find a fixed and objective truth. I did a minor in Chemistry and found that chemistry is one big assumptive, estimative, subjective science. Math comes the closest I have found to having any fixed truth. But as most of us think 1+1 = 2, mathematicians know better. So again, even something that we take for a fixed truth, maybe just isn't a truth at all. Although there may be inalienable truths that exist, I question if our human minds will ever be able to 'see' them. And if we can't ever see or perceive them, do they even exist for us? Deep down, I believe that there must be some inalienable truth in the universe, but I don't think we will ever know it. Writing that statement makes me sad, but can our subjective human minds ever perceive something so objective and impersonal (abstract) as truth.

Rebecca, I think I agree with you, but I just wonder if we can say an objective truth exists if we are never able to identify one. My niece would like to believe in pink unicorns, but If no person ever observes one, do they exist?

The truth that we, as humans, call truth, to me is ultimately relative. However, I do want to believe in an absolute truth but I question if an absolute truth will ever be known by humans.

Thanks for helping me define and better understand my thoughts.

Steve

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Jasmeet Virk **Date:** January 7, 2011 9:15 PM

Hi Rebecca,
I so agree with you. Truth is out there and we try to figure it out in different ways. So the processes can be divergent and subjective, but in the end they lead to the truth.
This makes me think of constructivism. I remember reading last term that constructing knowledge do not necessarily bear any correspondence to external reality.
(Driscoll, 2005) But then in Vygotsky's ZPD, teachers faciliate and let the student construct their own meaning and learning but when the student draws wrong conclusions, the facilitator help and guide the student ...[ I cannot find the article in my stuff right now] Does this then not lean towards realism and decontextualism in the end?

Jasmeet

Driscoll M.P (2005) Psychology of Learning for Instruction. (pp. 384-407) Toronto. ON: Pearson

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Erica Toombs **Date:** January 8, 2011 8:07 PM

Hi Steve. I think you analyzed your NOSP scores very eloquently here. I agreed with much of your discussion here, although my scores on the test didn't always concur with my (perceived) beliefs...
I liked how you put this: "Truth and knowledge are relative but process endures."
and also
"We want students to grasp concepts even if we have to simplify them or change their very nature. " - this is THE WAY that Science education works a la Bruner's spiral curriculum.

Reading through this thread had REALLY got me thinking. Gave me a huge headache :), but I still came back to discuss this further.

One of the interesting things about this thread is that we are discussing the concept of truth, and yet, for example, there is no direct experimental evidence that string theory is the correct description of Nature. It has been criticized by Physicists as not providing any generalizable conclusions or predictions.

So...truth and knowledge is relative, yet I think the process matters greatly in the acceptance and applicability of the finding. Perhaps, it will take 30 years for people to see that String Theory was in fact correct. But what if not? Can we accept it as truth, right now, without it being able to provide the checks and balances that Scientific process relies on?

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Steve MacKenzie **Date:** January 9, 2011 11:00 AM

Hi Erica,

You are right about string theory being questionable. It was one of the explanations that we were given during my chemistry courses and I assumed it had a stronger basis in scientific process. Apparently it has come under attack in recent years. Thanks for the info.

As a scientist, I would not build my process on previous knowledge that was not based in comprehensive scientific method. Therefore it would not be truth, but rather an interesting but largely unproven theory.

I think we cannot “accept it as truth, right now, without it being able to provide the checks and balances that scientific process relies on”.

Sorry for giving you a headache.

Steve

**Subject:** Re:Unit 1 Knowledge and Truth **Topic:** Unit 1: Knowledge & Truth

**Author:** Erica Toombs **Date:** January 9, 2011 8:11 PM

Don't apologize for giving me a headache! My brain was getting lazy with a whole month off, and you just woke it up for me.

Re: learning String theory in your Chemistry courses...yikes!!! I don't feel old, but clearly I am, based on that fact.
A long retired teacher once told me that he studied Chem under a prof who was progressively teaching the "NEW" Quantum Mechanics.

So apparently truth is relative (to how old you are!)