What's up in Astronomy By Eric Erickson

Offered Title: Is Astronomy Science?

My inner nerd gets excited whenever I think I am somehow doing science. Can't help it, seems I have always liked investigating how stuff works. Astronomy was my first crush, I was ten years old and had just learned how our Sun works. I felt like a scientist but deep down inside I now realize the truth, I was just using science, I was a user. I was *applying* science, still do, applying knowledge and data derived from the sweat of many, many scientists.

The word science comes from the Latin word *Scientia*, meaning knowledge. So, how does one "know" something? That question sounds metaphysical, can we really "know" anything? Well, I'm not going there. The knowledge of science is that of understanding.

Science is split into two directions, pure and applied. Pure refers to basic or fundamental study, research, experiment. Applied can refer to research, but it typically uses the results of previous research to study a proposed application of that research.

What I'm noodling toward here is what it takes for a discipline to be considered science.

Ancient scientists observed phenomena, identified their patterns and made predictions based on those patterns. Understanding the phenomena allowed for knowing what will happen.

Today the same is true, with the addition of means to prevent bias. Bias can reduce science to opinion…an educated or uneducated guess. Bias comes in many forms and one of the fundamental goals of science is to identify as many sources of bias as possible and try to eliminate them. Sometimes a bias isn't discovered until after the research or experiment is done and that's too bad. Do it again without the bias…if that's possible.

Science is dependent on method, and each scientific discipline has its own methods to ensure robust data, within the limitations of technology and conditions.

It starts with the *hypothesis*, a statement potentially explaining or predicting something, but needs further investigation. Then the work begins. Methods and materials are defined, making sure they are correct for the type of investigation proposed. Potential sources of bias are identified and measures to prevent their introduction put in place. Finally, the type of statistical treatment of data collected, if needed, is determined. The investigation commences, and data is collected via literature search and/or experiment and/or observational study. Results either do or do not support the hypothesis. A hypothesis getting enough support becomes a *theory*. That's good for the investigator. Theory is as far as it goes in science. No proofs, just evidence supporting or not supporting a theory. More support means a stronger theory.

Is Astronomy science? Sure, my question is a rhetorical trick, I just wanted to talk about science.

What's in the Sky?

August 20-23; dusk; south-southeast: Watch the Moon get fuller as it slides past Saturn and Mars in Sagittarius

August 26; pre-dawn; west and east: The full Moon is setting in the west and Mercury is rising in the east