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Thomas Kuhn

"The Structure of Scientific Revolutions" was written by Thomas Kuhn to explain the structure of the scientific community. It details how normal science builds its foundations, creates research, and how changes or shifts in paradigms take place.

According to Kuhn, normal science is built on previously known facts and information. Paradigms have believers who share the commitment to rules and standards. It is because the paradigm doesn't answer all questions that research takes place. Research is complete to find ways to explain why the pieces do not always fit together. The scientific method reminds me of the KWL chart teachers use with their students. Before a project is started the class; like a scientist must determine what is the prior knowledge. According to Kuhn students learn from the bases of the field without looking outside their paradigms tenets. Once a new paradigm emerges from the answers to the questions the old one fades away. In my experience, if it is like most teaching strategies or educational theories, it will return in the future with a new name.

Kuhn discusses how research is like solving a puzzle with predetermined solutions. Scientists attempt to force things to fit into a "box" or conceptual idea. When the results of research do not fit the predetermined outcome the findings are considered false or invalid. When this happens the research is recreated in order to figure out where the mistake was made in the process. Scientific research created questions or anomalies. If these findings happen repeatedly the paradigm is forced to change or be replaced completely. Normal science works against this occurrence. This sounds as if the paradigm followers are unable to admit their paradigm could be flawed.

It is like doing an "experiment" with a group of students, the teacher knows the outcome in advance. Students are expected to predict the outcome. When the experiment is completed as directed by the teacher the prediction becomes true. In education we do not allow for discovery or anomalies. The goal of the classroom science teacher in elementary grades is to teach the facts and theory of a particular paradigm. According Kuhn seemed to feel the same of all normal science,

Normal science sets up the misconception that scientific facts and paradigms are always true. If this were true we as humans would never grow and advance our abilities to think and process new information.

Kuhn feels that textbooks are created only to perpetuate normal science. Research and professional articles are written in such terms that only followers of a particular paradigm could understand. It is somewhat like a cult with specific terminology and acronyms. The layperson has difficulty understanding thus unable to question the validity of the paradigm. According to Kuhn textbooks present an inaccurate view that science theories were built somewhat like building blocks. Yes, anomalies in research have been gateways to new paradigms but in many cases paradigms are not related at all. I feel the inaccuracy comes from being so out of date. It is difficult to stay current with scientific research and theory without reading current journals and research papers. In education it is typical to be teaching science from textbooks that were published several years before the adoption, purchase, and student use ever happens.

I have mixed thoughts about Kuhn's thoughts about normal science. In one way, science needs to learn from the past. Without looking at the known facts and other prior knowledge, we will not realize what is new or different.

On the other hand, science can't assume that all future knowledge is related to known knowledge.

If paradigm research is only an attempt to force nature into a box that the paradigm draws no real progress would be made. Without thinking out of the "box" there would be no advancements such as cures for diseases or technological inventions.

A great deal of credit needs to be given to discovery learning or "pure" research. Within education students learn more about scientific theory and ideas by the discovery process. Kuhn would have enjoyed science from this point of view only if the students were allowed to experiment before the teacher provided the basic facts or assigns reading from the textbooks. This type of learning makes many students, teachers, and parents uncomfortable. They feel secure in the tenets of normal science.