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# True Science Education and the Creation Evolution Controversy

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## ABSTRACT

An examination of the "process skills of scientific inquiry" is undertaken. Each category is examined and compared and contrasted with both theories of creation and evolution.

## INTRODUCTION

An objective reader will quickly observe that within the last thirty-five years the whole concept of science education has changed dramatically. We have come from reading books about science and taking nature walks to teaching children in the kindergarten the "process skills of scientific inquiry." Yes, we have come to a place in our understanding of the "learning child" where we can break down the components of the "scientific method" into developmental skills and teach them to children. These skills are generally accepted as being the following, as they are expressed through studies by the National Science Foundation and "The National Science Teachers' Association:"

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|---|---|
| Observing | Interpreting Data |
| Inferring | Making Operational Definitions |
| Predicting | Formulating Questions and Hypothesis |
| Measuring | Experimenting |
| Communicating | Formulating Models |

These accepted components of the "Scientific Method" are the basis of objective scientific research and herein lies the problem with the creation vs. evolution issue as it relates to science education. To my knowledge, there is not one science teacher that has been trained properly in science education, that would deny that the process skills of science are the basis for excellence in classroom instruction in all of the sciences (K-12). Now, the question that will be answered here is, can creation science fit into the mold set forth through the process skills of scientific inquiry as well as or better than evolutionary science? Let's examine these factors in light of the two models, remembering that these are the criteria set forth by "The National Science Teachers Association," ("Theory Into Action"), "The American Association for the Advancement of Science," "The National Science Foundation," and by all other organizations that believe in the purity of science, science education, and the freedom to inquire. We will examine these skills step by step in light of the creation and evolution models.

## CRITERIA

**Observation:** Is this skill abrogated by the creation or evolution model? Do scientists pursuing either of these models claim that they can see either creation or evolution happening today; in other words, is it observable in some way or other? If not, then let's tell all students that the model is only a frame for reference and cannot be observed directly.

**Classification:** Is this skill abrogated by the creation or evolution model? Do both models incorporate classification schemes based upon clear and identifiable observations? If not, then let's tell our students that these classification schemes are not the last word. Let's tell them that these schemes are based upon man's ideas about relationships.

**Inferring**: Is this skill abrogated by the creation or evolution model? Do both use these skills within the framework of good scientific procedures? Are inferences based upon objective observations? Are students told that inferences are based upon evaluation and judgments and that these evaluations and judgments are often the reflection of personal biases? If not then let's begin to tell students about potential fallacies coming from scientific inferences.

**Predicting**: Is this skill abrogated by the creation or evolution model? Do both models attempt to make predictions from scientific evidences? Are students told that a prediction is the formulation of a specific result based upon past experience? If not then let's tell students that the reliability of predictions are based upon the accuracy of past observations and upon the nature of the event being predicted.

**Measuring**: Is this skill abrogated by the creation or evolution model? Do both models require the utilization of the best measurement techniques available? If not then let's tell students that measuring of properties of objects and events can be accomplished by direct comparison or by indirect comparison with arbitrary units which, for purposes of communication, may be standardized.

**Communicating**: Is this skill abrogated by the creation or evolution model? Do scientists pursuing both models' record and report the new data that are coming forth from their research periodically? If not then let's tell them that in order to communicate observations, accurate records must be kept which can be submitted for checking and rechecking by others.

**Interpreting Data**: Is this skill abrogated by the creation or evolution model? Do scientists attempt to carefully interpret their data in context with the principles of science? If not, then let's tell children that interpreting data requires the application of other basic process skills—in particular, the processes of inferring, predicting, classification, and communicating.

**Making Operational Definitions**: Is this skill abrogated by the creation or evolution model? Do these scientists and science educators attempt to make operational definitions so as to simplify communication concerning phenomena being investigated, or on the other hand, do they make it so complex that it cannot easily be understood. If not then let's teach children that definitions that become operational require the minimum of information to differentiate that which is being defined from other similar phenomena.

**Formulating Questions and Hypothesis**: Is this skill abrogated by the creation or evolution model? Do those attempting to pursue their model formulate questions before attempting to evaluate a situation or event and if they do, do they formulate their hypothesis from these questions? If not then let's tell children that they not only have the right to question but that questions, when precisely stated, are problems to be solved through application of the other processes of science.

**Experimenting**: Is this skill abrogated by the creation or evolution model? Do those attempting to pursue their model use the process of designing data-gathering materials as well as the process of gathering data for the purpose of testing a hypothesis? If not then let's tell children that experimenting requires objective reasoning and that even here there is a plan to relate cause and effect.

**Formulating Models**: Is this skill abrogated by the creation or evolution model? Are models, whether physical or mental, devised on the basis of acceptable hypothesis or hypotheses that have yet to be tested? If not then let's tell these truths and explain that models are used to design and explain the inter-relationship of ideas. Let's state to students that in many cases models imply new hypotheses; if testing these hypotheses results in new information, the model must be altered to include it.

If what we are doing in pursuit of scientific data to support our respective models for origins (creation and evolution) can fit into the context of these process skills of science then there is no room for any to exclude any of the others in the classroom instructional process. Certainly both are clearly models by any standard; one is no more religious or less religious than the other. One can also see how incorporating the critical skills of decision making into the process skills of scientific inquiry can easily lead to a clear and objective conclusion by those in the pursuit of true science.

## SUMMARY

### Freedom of Inquiry

"...that the search for knowledge and understanding of the physical universe and of the living things that inhabit it should be conducted under the conditions of intellectual freedom, without religious, political or ideological restrictions...that freedom of inquiry and dissemination of ideas require that those so engaged be free to search where their inquiry leads...without political censorship and without fear of retribution in consequence of the unpopularity of their conclusions; those who challenge existing theories must be protected from retaliatory reactions." (American Association for the Advancement of Science)

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