

Minority Report Update by Tom Henderson & Roger Sigler

Following the November Earth and Space Sciences (ESS) TEKS meetings Roger Sigler and Tom Henderson submitted a minority report. This note will re-examine the reasons for doing so and consider relevant actions taken in the December ESS committee meetings.

This is an update to our minority report. Specific examples are noted. It is recognized that the meetings were a committee effort and cannot reflect all views, the expert reviewers' reports, public feedback, or SBOE inputs, but are a consensus of the entire ESS committee.

Since our overall panel was divided into groups, we will split this update.

Tom Henderson Update:

Three problem areas were identified in the initial minority report:

1. The thrust of expert opinions was inadequately incorporated.
2. Elimination of all "strengths and weaknesses" (S&W) phrases substantially weakens an important requirement for critical thinking skills. In most cases no equivalent wording was substituted, and where substituted, was vague and inadequate to guide textbook publishers.
3. Another issue the experts had was that the tone of the TEKS - ESS was too dogmatic.

Update following the December Meetings

1. Expert opinion inclusion - The committee's primary task in our December meetings was to streamline the document per SBOE direction. This conflicted with my desire to incorporate more rewording suggested by the experts - the experts were typically wordier; thus their suggestions met resistance (a few examples: c6B, c6D, c8B, c13D).
2. Strengths and Weaknesses - ESS dealt with origins, along with some other disciplines. It is our impression that most evolutionists are committed to promoting their belief that every aspect of evolution is a proven fact. Therefore they are unable to consider known scientific weaknesses of the theory. I believe this was responsible for the massive effort to have "strengths and weaknesses" terminology removed from all disciplines.

We think this strong belief in evolution and naturalism is behind statements that claim “scientific weaknesses of evolution” are “not scientific”. In other words “there are no scientific weaknesses of evolution.”

What will the textbook writers do with this requirement? ESS (c)(13)(F) (formerly c8A):

“discuss scientific hypotheses for the origin of life by abiotic chemical processes in an aqueous environment through complex geochemical cycles.”

Will the “weaknesses” of current origin of life ideas even be “discussed”? With the current wording I doubt it. This TEK provides insufficient guidance for the TEA and book publishers in this regard.

The committee had considerable discussion regarding expert reviewer Dr. Garner’s rewording on p.32 but rejected it: “Critically evaluate the strengths and weaknesses of prominent scientific hypotheses for the origin of life by abiotic chemical processes in light of the complexity of living systems, distinguishing what is known and what is assumption or speculation;”. What does the SBOE think about this issue?

3. Dogmatic tone - according to invited reviewer Garner p.27 “I found an almost continual aggressive, dogmatic tone to much of the ESS standards. This will not instill students with the scientific values of skepticism, openness, or tentativeness. In several places, concepts are presented to students as if they were established fact ... rather than scientific hypotheses. In my opinion, those who wrote the proposed ESS standards have an agenda that, in places, borders on indoctrination. This casts some doubt on the real purpose of the course, and I encourage the Texas Education Agency to monitor its implementation or change its tone drastically.”

Rewording has helped remove some of Garner’s concerns except those relating to the origin of life. Others may still be too dogmatic: examples from expert reviewer Meyer include p8 (c6B, c6D, c8B, c13D). What does the SBOE think?

Roger Sigler Update:

The committee reviewed suggestions by Roger Sigler, who emailed in his changes, and was available during conference calls with the rest of the committee members.

Concerning c7B Roger suggested including some of the assumptions, which are critical to accurately evaluate radiometric “ages”. He especially emphasized the importance of

the rock forming in and remaining in a 'closed-system', free from contamination or leakage. Hence, he suggested either of the following two for c7B:

- evaluate and understand the assumptions of radiometric dating, or
- evaluate the closed system criteria for radiometric dating methods of igneous rocks as used to calculate the ages of Earth, the Moon and meteorites.

Rationale: 'Closed system' is a vital concept that students would have already learned in physics; thus as a capstone course they will gain an understanding of how applicable this is during the formation of igneous rocks.

For additional backup Roger sent these quotes from Gunter Faure's "Principles of Isotope Geology 2nd Ed." New York: John Wiley & Sons, 1986:

"When these four basic assumptions [one of these is the 'closed system'] are satisfied, the solution ... yields a date which may represent the age of the rock or mineral" (p. 41).

"In many instances the dates calculated for minerals containing U and Th are not concordant. The reason seems to be that most minerals are not closed systems, but may lose or gain Pb, U, Th, or intermediate daughters after crystallization" (p. 288).

The consensus from most of the other committee members was that this would "confuse the students." We think students at the senior level are perfectly capable of understanding these limitations on the use of radiometric techniques.

The committee did agree to add "that can be used," which suggests not all rocks are usable. However, is this language sufficient to guide the TEA and textbook publishers? What does the SBOE think?

It now reads:

apply radiometric dating methods that can be used to calculate the ages of igneous rocks from Earth and Moon, and meteorites

Although this language is better, it still does not allow students to learn any of the foundational assumptions, which are critical for an accurate use of radiometric dates. ESS is a "capstone class;" therefore, Roger thinks that at the very least, students be permitted to understand the "closed-system" criteria during rock formation.

Concerning c8 Roger suggested replacing the word "evolution" with "change" in this heading only, and leaving the word "evolution" as is in c8(A).

Nearly all scientists agree that geological and biological change has taken place on Earth. The problem is that the very word “evolution” is subjective, for there are at least three broad definitions of “evolution”:

- **Evolution #1:** First, evolution can mean that the life forms we see today are different than the life forms that existed in the distant past. Evolution as "change over time" can also refer to minor changes in features of individual species -- changes which take place over a short amount of time. We can observe this type of evolution going on in the present and even skeptics of Darwin's theory agree that this type of "change over time" takes place. Evolution in this sense is "fact." However, it is invariably the case that when Darwinists cite some present-day observations of change within a species, they will be small-scale changes that are not easily extrapolated to explain how complex biological features arose.
- **Evolution #2:** Some scientists associate the word "evolution" with the idea that all the organisms we see today are descended from a single common ancestor somewhere in the distant past. This claim became known as the Theory of Universal Common Descent. This theory paints a picture of the history of life on earth as one great branching tree. Many scientists are skeptical of Universal Common Descent.
- **Evolution #3:** Finally, some people use the term "evolution" to refer to a cause or mechanism of change, the biological process Darwin thought was responsible for the branching pattern. Darwin argued that unguided natural selection had the power to produce fundamentally new forms of life. Together, the ideas of Universal Common Descent and natural selection form the core of Darwinian evolutionary theory. "Neo-Darwinian" evolution combines our knowledge of DNA and genetics to claim that random mutations in DNA provide the variation upon which natural selection acts in a completely unguided fashion. It is this form of evolution that is the most controversial meaning of evolution.

Only the first definition is objective. The other two have never been demonstrated and are ideological, and as such, provide insufficient guidance for textbook publishers. The word “change” will help publishers be more objective. What does the SBOE think?

In conclusion, while much candid discussion took place during the last panel meeting, we remain divided on these key issues as described herein. The proposed ESS standard has been significantly improved, but we call on the elected State Board of Education to continue improving it.

Best regards,

Tom Henderson & Roger Sigler